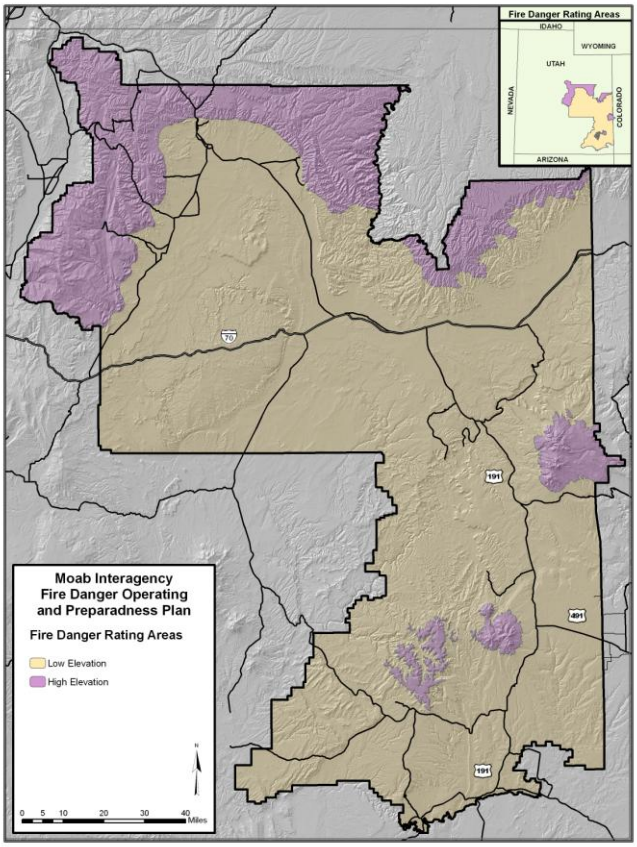
Moab
Interagency
Fire Danger Operating and Preparedness Plan



Bureau of Land Management
USDA Forest Service
National Park Service
State of Utah
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Moab Interagency
Fire Danger Operating and Preparedness Plan

Recommended By:

/s/ Leanard Garcia	06-07-2011
Leanard Garcia, Acting Fire Management Officer Bureau of Land Management, Moab Field Office	Date
/s/ Michelle Smith	06-06-2011
Michelle Smith, Acting Forest Fire Management Officer U.S. Forest Service, Manti La Sal National Forest	Date
/s/ Rudy Sandoval	06-08-2011
Rudy Sandoval, Area Fire Management Officer State of Utah, Division of Forestry, Fire and State Lands	Date

Approved By:

Shelly Smith, Field Office Manager **Bureau of Land Management, Moab Field Officer**	**Date**
Pamela E. Brown, Forest Supervisor **U.S. Forest Service, Manti La Sal National Forest**	**Date**
Jason Johnson, Acting Area Manager **State of Utah, Division of Forestry, Fire and State Lands**	**Date**
Denny Ziemann, Fire Coordinator **National Park Service**	**Date**

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INTRODUCTION

Each Agency (BLM, USFS, NPS, and State) must maintain an appropriate level of preparedness to meet wildland fire management objectives. Preparedness is based upon the assessment of fuels and weather conditions utilizing the National Fire Danger Rating System (NFDRS). This Fire Danger Operating Plan (FDOP) documents the establishment and management of the Moab Interagency fire weather system and incorporates NFDRS fire danger modeling into fire management decisions. In addition, this plan combines an Operating Plan with a Preparedness Plan for four primary wildland fire management agencies in southeastern Utah. Direction for the development of a Fire Danger Operating and Preparedness Plan can be found in the BLM/USFS Standards for Fire and Aviation Operations and USDA Forest Service Manual 5120.

This Plan simplifies the decision making process for agency administrators, fire managers, dispatch centers, agency cooperators and firefighters by establishing agency planning and response levels using the best available scientific methods and historical weather and fire data. This plan also outlines procedures for developing seasonal risk analysis and defines fire prevention action items by providing the direction necessary to convey fire danger awareness to fire management personnel of escalating fire potential. This awareness is critical when wildland fire danger levels are at severe thresholds that may significantly compromise safety and control.

OBJECTIVES

- Provide a tool for agency administrators, fire mangers, dispatchers, agency cooperators and firefighters to correlate fire danger with appropriate fire business decisions in southeastern Utah.
- Delineate Fire Danger Rating Areas (FDRA's) in southeastern Utah with similar climate, fuels and topography.
- Establish a fire weather monitoring network consisting of Remote Automated Weather Stations (RAWS), which comply with NFDRS Weather Station Standards (PMS 426-3).
- Determine fire business and Adjective Fire Danger Rating break points using Weather Information Management System (WIMS), National Fire Danger Rating System (NFDRS), Fire Family Plus software, and by analyzing historical weather fire occurrence data.
- Ensure that agency administrators, fire mangers, cooperating agencies, industry/commercial entities, and the public are notified of the potential fire danger.
- Provide guidance to interagency personnel outlining specific daily actions to take at each Preparedness Level.
- Identify seasonal risk analysis criteria and establish general fire severity thresholds.
- Identify the fire-ending event using the term module of the Rare Event Risk Assessment Process (RERAPP).
- Develop and distribute fire danger pocket cards to all personnel involved with fire suppression activities within the Eastern Utah Fire Danger Rating Area.
- Identify program needs and suggest improvements for the Fire Danger Operating and Preparedness Plan.
- Define roles and responsibilities in making fire preparedness decisions, managing weather information, and briefing suppression personnel regarding current and potential fire danger.

INVENTORY AND ANALYSIS

In order to apply a system that will assist managers with fire management decisions, the problems must be inventoried and analyzed to determine the most appropriate system that will adequately address the issues. This inventory and analysis includes looking at the involved parties, or the social aspects that will be impacted; organizing and analyzing fire danger rating areas; incorporating weather analysis; statistical analysis, which incorporates analyzing fire history and Preparedness Level Breakpoints.

Involved Parties

This plan will affect a wide range of entities that can be grouped into three major categories:

- **Agency:** Employees of the Federal, State and local governments involved in the cooperative effort to assist with wildland fires. This includes BLM, USFS, NPS, BIA, and State of Utah employees, along with relevant volunteer fire departments.
- **Industry:** Organizations that either utilize the natural resources or have permitted activities on federal, state or private wildland for commercial purposes. These entities or activities include ranchers, wilderness camps, railroads, mines, timber harvesting, filming, building construction, oil and gas, etc..
- **Public:** Individuals who use the land for recreational purposes such as off-highway vehicle (OHV) use, camping, hiking, fishing, skiing, firewood gathering, mountain biking or general travel. This group also includes those living within the wildland/urban interface (WUI).

Table 1 outlines the differences between the target groups (Agency, Industry and Public). The ability to regulate, educate, or control a user group will be based upon the communication interface method and how quickly they can react to the action taken. In addition, each action will result in positive and /or negative impacts to the user groups. Consequently, the decision tool that would be most appropriate would depend upon the sensitivity of the target group to the implementation of the action.

Table 1. Agency, Public and Industry Interaction Matrix

Involved Party	Action	Controllability	Interface Method	Potential Positive Impacts	Potential Negative Impacts	Decision Tool
Agency	Initial Attack (IA) response	Moderate/High	Radio Telephone Fax E-mail Internet	Successful IA	Accidents/ incidents	Burning Index
	Automatic Dispatch of Initial Attack Resources			Resource(s) effective	Resource(s) not essential for successful IA	Burning Index
	Pre-positioning of Resources			Improved IA capability	Financial Logistical	Energy Release Component
	Suspension of Prescribed Fire Projects			Prevent escaped Rx fires	Missed opportunity to treat fuels	Energy Release Component
	Extended Staffing			Improved IA capability	Financial Logistical	Burning Index & ERC
	Wildland Fire Use			Ecological benefits	Public perception	Energy Release Component
Industry	Chainsaw Restrictions	Low/Moderate	Telephone Mail E-mail Face-to-Face Signs Internet	Fire prevention	Political Financial	Energy Release Component
	ORV restrictions			Fire prevention	Political Financial	Energy Release Component
Public	Campground Closures	Low	Newspaper Television Signs Internet Face-to-Face	Fire prevention	Political Financial	Energy Release Component
	Fuel wood Cutting Restrictions			Fire prevention	Political Financial	Energy Release Component
	Campfire Restrictions			Fire prevention	Political Financial	Energy Release Component
	ORV restrictions			Fire prevention	Political Financial	Energy Release Component
	Debris Burning			Fire prevention	Political Financial	Energy Release Component
	Fireworks			Fire prevention	Political Financial	Energy Release Component

Fire Danger Rating Areas

Fire Danger Rating Areas are geographic areas relatively similar in climate, fuels, fire occurrence and topography within which the fire danger can be assumed to be uniform. The Moab Interagency Fire Danger Planning Area has two Fire Danger Rating Areas (FDRA's). They are identified as the High Elevation Mountains FDRA and the Lower Elevation Mesa Top and Desert FDRA.

Low Elevation Mesa Tops and Desert FDRA

- **Location:** The Low Elevation FDRA covers lands located below 7500 feet in elevation north of Interstate 70 and lands generally below 8000 feet south of interstate 70. Mesa tops covered with pinyon-juniper are in the lower elevation FDRA while mesa tops with the predominant cover of ponderosa pine are in the high elevation FDRA. This area is primarily BLM administered land and scattered tracts of private and State land administered by the counties and State. National Park Service land is also in this area.

- **Fuels:** The fuels complex of the Low Elevation FDRA consists of forbs, perennial grasses, western annual grasses, salt desert shrub, sagebrush, pinyon-juniper, and mixed conifer. Most wind driven wildfires typically grow large due to the significant continuity of cheat grass in the area. Although it may appear that NFDRS fuel model A (western annual grass) is the dominant fuel model in this FDRA, it does not necessarily correlate as well as fuel model G with historical fire occurrence. NFDRS fuel model G correlates well with Burning Index for Dispatch Levels and ERC for preparedness levels in this FDRA. Refer to Appendix J for information regarding the Firefamily Plus analysis.

- **Climate:** Hot and dry weather typically dominates the Low Elevation FDRA during fire season. Utah is the second driest state in the nation behind Nevada. The temperatures rise to the high 90's, relative humidity drops to the lower teens, and wetting rain events are scarce. Summer weather patterns that affect the area are westerly and southwesterly flows. Westerly flows generally bring hot and dry air into the region with little or no precipitation. The main concern is when low-pressure systems or upper-level disturbances pass through the area with enough energy and moisture to initiate thunderstorm activity and erratic winds. Fire activity may be infrequent, but the potential for large fire growth is usually quite high. Southwesterly flows typically bring monsoonal moisture into the region. Fire frequency may increase due to additional thunderstorm activity, but fire growth potential could be lower due to increased moisture. Fires in this FDRA are typically in climate class 1 (Arid/Semi-arid).

- **Topography:** The Low Elevation FDRA is a mixture of deserts, mesas, and canyons.

- **Fire Occurrence:** From 1995 to 2007 (12 years), the area recorded over 1,500 fires and burned over 50,000 acres. Approximately 80% of these were lightning caused and 20% were human caused. The months of June, July and August represent the largest percentage of fire activity (79%).

High Elevation Mountains FDRA

- **Location:** The High Elevation FDRA covers lands above 7500 feet north of Interstate 70 and lands above 8000 feet south of Interstate 70. It primarily includes USFS administered land, BLM administered land in the Book and Roan Cliffs, and scattered tracts of private/state lands administered by the counties and the State.

- **Fuels:** The fuels complex of the High Elevation FDRA is similar to that of the Low Elevation FDRA except that the area has a greater concentration of 100-hour and 1,000-hour time lag fuels, and also contains a greater density of mixed conifer stands. The occurrence of western annual grasses is much lower. The fires of concern typically occur in steep and remote country where access is a problem. Fuel Model G has been selected to represent this area and the Energy Release Component (ERC) will be used as the NFDRS Index to calculate USFS agency preparedness levels. Refer to Appendix J for information regarding the Firefamily Plus analysis.

- **Climate:** The climate class ranges from high desert to alpine forest. Precipitation generally increases with elevation. Lower elevations typically receive 12-15 inches per year with higher peaks receiving up to 60 inches per year. February and April tend to be the wettest months while summer and early fall are typically the driest. Summer temperatures can rise to the 90's at lower elevations and mid-80's at higher elevations. Predominate wind patterns during the fire season are southwest except where modified by local topography. Strong up-canyon winds cause control problems. Relative humidity can drop to the lower teens and occasionally into the single digits. Fires in this FDRA are typically in climate class 2 (Sub humid).

- **Topography:** The High Elevation FDRA includes the La Sal, Abajo, Manti, Book Cliff, and Roan Cliff mountain ranges. Its drainages are steep and rocky. The remoteness of this area hinders radio and cellular communication.

- **Fire Occurrence:** From 1995 to 2007 (12 years), the area recorded over 700 fires and burned over 200,000 acres. Approximately 90% of these were lightning caused and 10% were human caused. The months of July and August garner the largest percentage of fire activity (69%).

Table 2 highlights characteristics for each FDRA, derived from the Weather Information Management System's (WIMS) station catalogue.

Table 2. FDRA Characteristics

FDRA Characteristics		
Characteristic	Low Elevation	High Elevation
Special Interest Group	Flattop Mountain, Bryson Canyon, Big Indian Valley, Kane Gulch	Joe's Valley, Bruin Point, North Long Point, Carpenter Ridge
NFDRS Fuel Models	G (primary), A, H	G (primary), A, H
Slope Class	1 (0-25%)	3 (41-55%)
Climate Class	1 (arid)	2 (semi-arid)
Annual Precipitation	9.3 Inches	22.5 inches
Top Elevation	4000 Feet	11,000 Feet
Acres	7.98 Million	2.02 Million
Green-up Standard (estimate)	15-Apr	15-May
1000 Hr Starting	15	20
KBDI Starting	100	100
Agencies	BLM, NPS, FS, State of Utah	MLF
Large Fires	100	100

Weather Analysis

Weather is one of the three components that determines fire behavior, and the most variable component, thus it is integral to determining fire danger. For this Plan, weather was analyzed using the data received from eight remote automated weather stations (RAWS) within the Moab Interagency Dispatch Area. The Moab Field Office (BLM) manages five active RAWS: Bruin Point, Bryson Ridge, Flattop Mountain, Big Indian and Kane Gulch. All of these stations comply with NWCG NFDRS Weather Station Standards. The Bryson Ridge, Flattop Mountain, Big Indian and Kane Gulch RAWS have been combined in WIMS as a Special Interest Group (SIG) to compute an equally weighted set of fire danger indices for the low elevation FDRA.

The Manti La Sal National Forest (USFS) manages three active RAWS: Joe's Valley, Carpenter Ridge, and North Long Point. All of these stations comply with NWCG NFDRS Weather Station Standards. The Joe's Valley, Carpenter Ridge, Bruin Point and North Long Point RAWS have been combined as a Special Interest Group (SIG) to compute fire danger indices. This SIG is weighted to reflect years of fire weather collected and statistical goodness of fit with fire business. Refer to Table 3 for a summary of all RAWS and Appendix F for a description of database alterations and a map of the RAWS locations.

Table 3. RAWS Summary

Station ID	Station Name	Status	Agency/Owner	WIMS Data Years	Elevation (feet)
053808	Carpenter Ridge	Active	USFS-UT-MLF	1995-2010	8188
421602	Joes Valley	Active	USFS-UT-MLF	1995-2010	8700
421702	Bruin Point	Active	BLM-UT-Moab	1995-2010	9700
422102	Bryson Canyon	Active	BLM-UT-Moab	1995-2010	5320
421904	Signal Peak	Active	USFS-UT-FIF	1995-2010	8750
422710	North Long Point	Active	USFS-UT-MLF	1995-2010	8680
422711	Big Indian Valley	Active	BLM-UT-Moab	1995-2010	6960
422712	Kane Gulch	Active	BLM-UT-Moab	1995-2010	6500
421501	Sevier Reservoir	Active	USFS-UT-FIF	1995-2010	5330
422002	Flattop Mountain	Active	BLM-UT-Moab	1995-2010	6120

Statistical Analysis

To get a better view of the interactions between weather and fire in the FDRA's, fire history, weather history and the relationship between historical fires and historical weather for each FDRA was analyzed using FireFamily Plus. Break points, or thresholds that correspond to a change in historical fire activity were also analyzed using Burning Index (BI) or the Energy Release Component (ERC) to create a Preparedness Level Break Point (based on ERC), Dispatch Level Break Point (based on BI), and Adjective Rating Level Break Point (based on ERC).

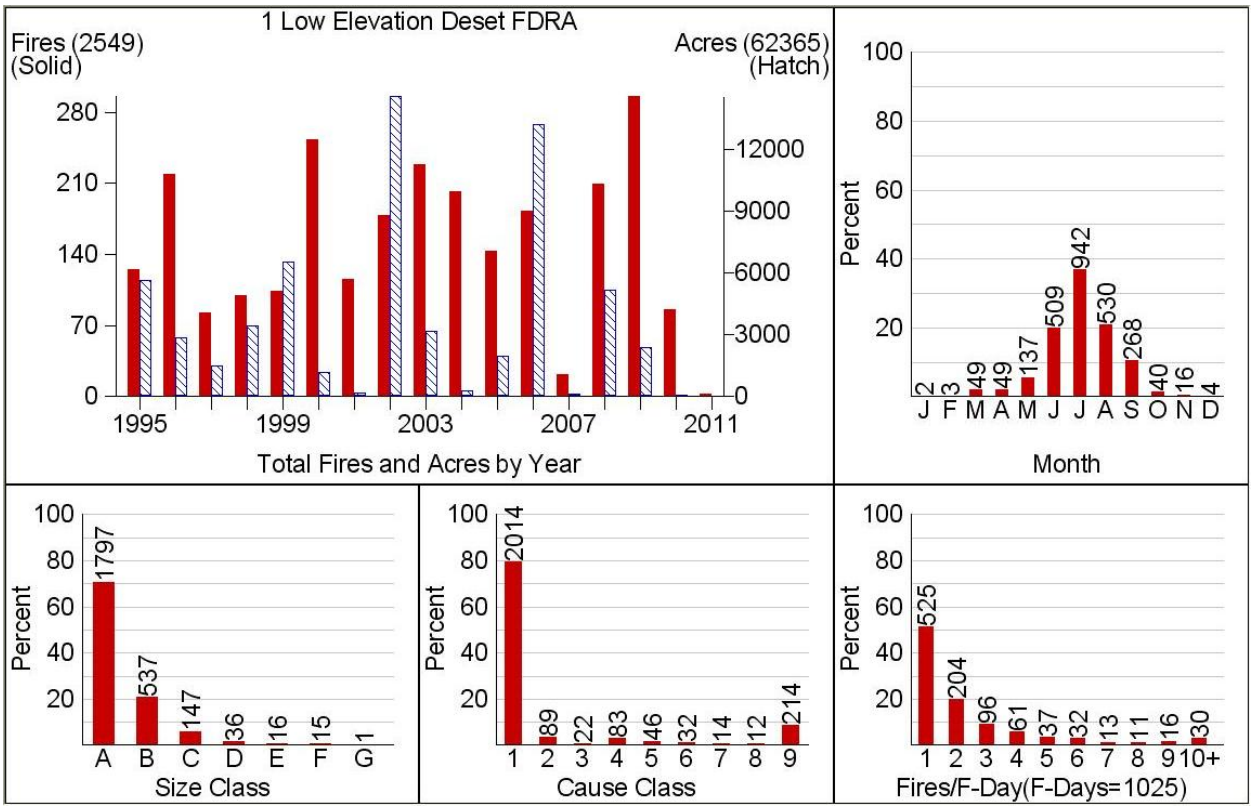
- **Fire History**

The most recent fifteen years (1995-2010) of fire history data was obtained from four agencies (BLM, USFS, National Park Service and the State of Utah). The National Park Service (NPS) data was not used in this analysis because their number of fires was less than one percent of the total number of fires reported for the MIFC area and the BLM and/or State responded to the majority of these fires so most are already included in the BLM/State fire count. BLM fire data was obtained from the Wildland Fire Management Information website. USFS fire data was obtained from NIFMID. The State of Utah data was obtained from their computer database. Since all three agencies may have reported the same fire in their respective databases, the fires were cross-referenced and duplicate fires were eliminated (where possible, small fires are possibly duplicate). FireFamily Plus software was utilized to produce statistics and graphs.

State and Interior Agencies often count agency assist fires in their fire summary statistics, this will cause an over-estimation of the number of fires in both the high and low elevation fire danger operating areas. A more detailed fire occurrence workload analysis (by agency) is in Appendix K.

Graphs 1 and 2 illustrate the fire history for the Low and High Elevation FDRA's. Graphs include acres burned by year, month of fire, fire size, fire cause and multiple fire days (days when more than one fire occurred).

Graph 1. Low Elevation Mesa and Desert FDRA



Size Class:

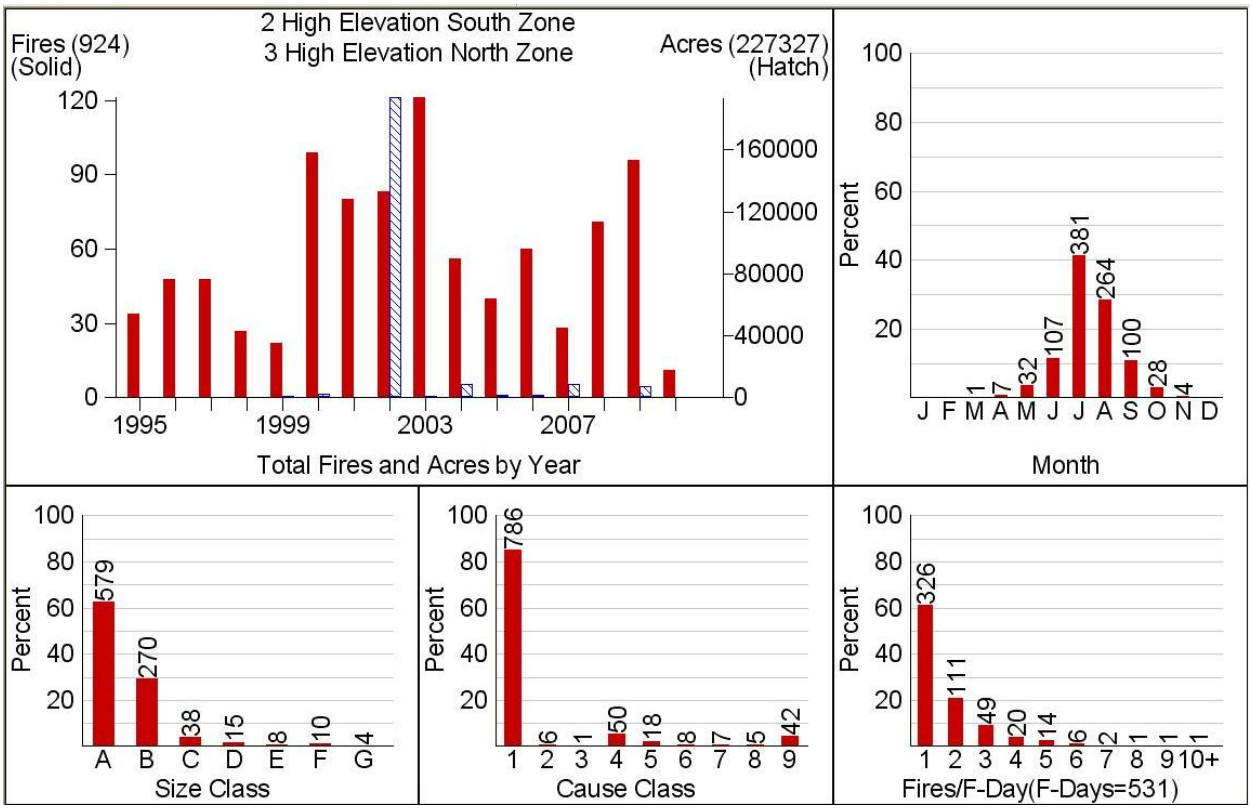
A = 0 - .2 acres
B = .3 - 9 acres
C = 10 - 99 acres
D = 100 - 299 acres
E = 300 - 999 acres
F = 1000 - 5000 acres
G = > 5000 acres

Cause Class:

1 = Lightning
2 = Equipment
3 = Smoking
4 = Campfire
5 = Debris Burning
6 = Railroad
7 = Arson
8 = Children
9 = Miscellaneous

Fires per Fire-day

Graph 2. High Elevation Mountains FDRA



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G = > 5000 acres

Cause Class:

1 = Lightning
2 = Equipment
3 = Smoking
4 = Campfire
5 = Debris Burning
6 = Railroad
7 = Arson
8 = Children
9 = Miscellaneous

Fires per Fire-day

- **Break Points**

The National Fire Danger Rating System (NFDRS) utilizes the WIMS processor to analyze weather data and forecasted data stored in the NIFMID database to produce fire danger ratings for corresponding weather stations (RAWS). NFDRS outputs from the WIMS processor can be used to determine various levels of fire danger rating. The system is designed to calculate worst-case scenario fire danger. NFDRS will be utilized in three ways for the purpose of this plan: 1) To determine the **Preparedness Level**, which will help agency personnel determine an appropriate state of readiness of suppression forces; 2) To determine the **Dispatch Level,** which is a function of Burning Index, and is a decision tool for dispatchers to assign initial attack resources to reported fires; and 3) to compute the **Adjective Fire Danger** for the purpose of communicating fire danger to public and industrial interests.

In order to determine the Preparedness Level, Dispatch Level and Adjective Fire Danger, "break points" for each need to be calculated. Preparedness Level Break Points are thresholds that correspond to changes in historical fire activity based on a correlation of ERC and historical fires (termed "fire business"). Dispatch Break Points correspond to

changes in historical fire activity based on BI and historical fires (fire business), and Adjective Fire Danger Rating (AFDR) Break Points are based on staffing classes (divisions of fire danger) and ERC. Preparedness Level Break Points differ from AFDR Break Points in that they take fire history into account in addition to weather data.

The Fire Family Plus software package was used to establish the fire business breakpoints. A statistical analysis based on historical weather adjusted for fire activity determines the appropriate staffing index and associated break points for each FDRA. Refer to Appendix J for information regarding the Firefamily Plus analysis.

- **Preparedness Level Break Points:** Table 4 details the break points and items analyzed for the two FDRA's. The final preparedness level determination will also incorporate fire activity, fire weather advisories, Haines Index, and a measure of Ignition Risk. Daily index/component values will be obtained from WIMS and used in preparedness and dispatch level worksheets.

Table 4. Preparedness Level: Fire Family Plus Analysis Factors and Determinations

Rating Area	RAWS	Data Years Available	Weight Factor	Fuel Model	NFDRS Index	Fire Business Break Point Ranges	
Low Elevation Mesa Tops and Desert	SIG:					PL 1	00 – 40
	Flattop	1995 - 2010	1			PL 2	41 – 60
	Bryson Ridge	1995 - 2010	1	G	ERC	PL 3	61 – 83
	Big Indian	1995 - 2010	1			PL 4	84 – 92
	Kane Gulch	1995 – 2010	1			PL 5	93 +
High Elevation Mountains	SIG:					PL 1	00 – 18
	Joe's Valley	1995 - 2010	.15			PL 2	19 – 41
	Bruin Point	1995 - 2010	.35	G	ERC	PL 3	42 – 61
	Carpenter Ridge	1995 - 2010	.15			PL 4	62 – 79
	North Long Point	1995 - 2010	.35			PL 5	80 +

- **Dispatch Level Break Points:** Table 5 lists the Dispatch Level Break Points and the factors included in the analysis.

Table 5. Dispatch Level: Fire Family Plus Analysis Factors and Determinations							
Rating Area	**RAWS**	**Data Years Used**	**Weight Factor**	**Fuel Model**	**NFDRS Index**	**Fire Business Break Point Ranges**	
Low Elevation Mesa Tops and Desert	**SIG:** **Flattop** **Bryson Ridge** **Big Indian** **Kane Gulch**	 **1995 - 2010** **1995 - 2010** **1995 - 2010** **1995 - 2010**	 **1** **1** **1** **1**	**G**	**BI**	**Low** **Moderate** **High** **Extreme**	 **00 – 50** **51 – 63** **64 – 80** **81 +**
High Elevation Mountains	**SIG:** **Joe's Valley** **Bruin Point** **Carpenter Ridge** **North Long Point**	 **1995 - 2010** **1995 - 2010** **1995 - 2010** **1995 - 2010**	 **.15** **.35** **.15** **.35**	**G**	**BI**	**Low** **Moderate** **High** **Extreme**	 **00 – 40** **41 – 50** **51 – 60** **61 +**

- **Adjective Fire Danger Rating (AFDR) Break Points:** AFDR Break Points are based upon the seasonal climatic breakpoints. Climatological breakpoints are points on the cumulative distribution of one fire weather/fire danger index without regard to associated fire occurrence/business. For example, the value of the 90th percentile ERC is the climatological breakpoint at which only 10 percent of the ERC values are greater. The percentiles for climatological breakpoints are predetermined by agency directive. The BLM uses the 80th and 95th percentiles; the USFS uses the 90th and 97th percentiles. The Low Elevation Mesa and Desert FDRA will use the BLM's percentiles and the High Elevation Mountains FDRA will use the USFS percentiles for AFDR Break Points. The adjective rating will be averaged over seven days to create a smoothing effect. The daily adjective rating will be entered from WIMS then smoothed using a Microsoft Excel calculation.

  Five staffing class intervals (1-5) that correspond with five levels of adjective fire danger (low, moderate, high, very high and extreme) will be used for both FDRA's. Table 6 and Table 7 illustrate the AFDR Break Points components for both FDRA's.

Table 6. Low Elevation Mesa Tops and Desert FDRA AFDR Break Points

Input Information			Staffing Class and Percentile Break Points	
RAWS	**Fuel Model**	**Staffing Index**	**80th**	**95th**
Flattop Mtn. (422002)	G	ERC	95	103
Bryson Ridge (422102)	G	ERC	91	101
Big Indian (422711)	G	ERC	89	100
Kane Gulch (422712)	G	ERC	89	99

Table 7. High Elevation Mountains FDRA AFDR Break Points

Input Information			Staffing Class and Percentile Break Points	
RAWS	**Fuel Model**	**Staffing Index**	**90th**	**97th**
Joe's Valley (421602)	G	ERC	86	97
North Long Point (422710)	G	ERC	87	95
Bruin Point (421702)	G	ERC	76	85
Carpenter Ridge (053808)	G	ERC	88	95

APPLICATIONS

Worksheets (flowcharts) will be used to determine the daily Preparedness and Dispatch Levels from the calculated break points. The resultant Preparedness and Dispatch Levels for the different FDRA's will be broadcast in conjunction with the morning information report and documented on the daily resource status report. The adjective fire danger ratings will be broadcast and documented in the same manner.

Although fire danger ratings do not predict human-caused fires, a strong effort should be made to communicate the fire danger as it changes throughout the fire season. The social, political, and financial impacts of wildfires on agency, public, and industrial entities can be far-reaching. Loss of life, property, and financial resources can potentially be associated with any wildfire. As the fire danger fluctuates, agency personnel need to have pre-planned and appropriate responses. These actions should not only focus on appropriate fire suppression, but also mitigation/education.

Preparedness Level

The Preparedness Level is a five-tier (1-5) fire danger rating system that will be based on Energy Release Component and indicators of fire business. The fire business indicators used to calculate the Preparedness Level include an indication of fire activity, Red Flag Warnings or Fire Weather Watches, Haines Index, and a measure of ignition risk. A flow chart guides personnel through the process. Several procedures and guidelines are to be followed once the Preparedness Level has been determined. The break points for the Preparedness Level are set using an historical analysis (Fire Family Plus) of fire business and its relationship to 1300 RAWS observations entered into the NIFMID database and processed by WIMS, which calculates the staffing index values (BI, IC, SC, ERC, etc).

Worksheet Instructions:

1. **Staffing Index Value:** Place a checkmark in row one indicating the forecasted staffing index(ERC value). These indices (forecasted by the Salt Lake or Grand Junction Weather Office) are based on the 1300 RAWS observations that are input to the WIMS processor by Moab Dispatch personnel.
2. **Haines Index:** Place a checkmark in row two indicating the forecasted Haines Index Range.
3. **Red Flag Warning or Fire Weather Watch:** Place a checkmark in row three based on the presence of these advisories issued by the National Weather Service.
4. **Ignition Risk:** Place a checkmark in row four to indicate the relative risk of human and/or naturally caused ignitions. Human-caused risk is based upon activities such as holidays or special events occurring within the FDRA. During holiday weekends (July 4th, July 24th, Labor Day) or special events, the ignition risk is "High;" otherwise, it is "Low." Lightning Activity Level (LAL) would be the basis for relative risk for natural ignitions; a forecasted LAL of 1 is "Low" ignition risk; 2 through 6 is "High". If multiple LALs are forecasted within the FDRA, use the highest LAL forecasted for that FDRA to complete the worksheet on row four.
5. **Fire Activity:** Fire activity can be defined as any fire within the MIFC area (regardless of FDRA) that requires the commitment of a Federal ground or aviation resource. Place a checkmark in the appropriate box in row five.

Preparedness Level Worksheet
Moab Interagency Fire Center

	ERC - Model G (Low Elevation FDRA)		**0 - 40**		**41-60**		**61-83**		**84-92**		**93 Plus**	
	ERC - Model G (High Elevation FDRA)		**0 – 18**		**19-41**		**42-61**		**62-79**		**80 Plus**	
1	✓ ⇨											
	Haines Index		**2-4 ⇩**	**5-6 ⇩**	**2-4 ⇩**	**5-6 ⇩**	**2-4 ⇩**	**5-6 ⇩**	**2-4 ⇩**	**5-6 ⇩**	**2-6 ⇩**	
2	✓ ⇨											
	Red Flag Warning Fire Wx Watch	**No ⇩**	**Yes ⇩**	**No ⇩**	**Yes ⇩**	**No ⇩**	**Yes ⇩**	**No ⇩**	**Yes ⇩**	**No ⇩**	**Yes ⇩**	
3	✓ ⇨											
	Ignition Risk	**Low-High ⇩**	**Low ⇩**	**High ⇩**	**Low ⇩**	**High ⇩**	**Low ⇩**	**High ⇩**	**Low ⇩**	**High ⇩**	**Low ⇩**	**High ⇩**
4	✓ ⇨											
	Fire Activity	**Yes or No ⇩**		**No ⇩**	**Yes ⇩**	**No ⇩**	**Yes ⇩**	**No ⇩**	**Yes ⇩**	**No ⇩**	**Yes ⇩**	**Yes or No ⇩**
5	✓ ⇨											
	Preparedness Level	**I**			**II**		**III**		**IV**		**V**	

Dispatch Level

Agency personnel use the Dispatch Level (response level) to assign initial attack resources based on pre-planned interagency "Run Cards." Combined with predefined geographic areas (Dispatch Zones), the Dispatch Level is used to assign an appropriate mix of suppression resources to a reported wildland fire based upon fire danger potential.

The Dispatch Level is a two-tier fire danger rating system that is based on Burning Index and the current local Preparedness Level. Burning Index is the most appropriate NFDRS index and/or component that correlates to fire occurrence. In both low and high Fire Danger Rating Areas (FDRA), Burning Index (BI) in NFDRS Fuel Model G has been determined to be the best NFDRS index that statistically correlates to the potential for large fires to occur. Due to the ability of BI to reflect the most current fire danger potential, and the Dispatch Center's ability to manage agency personnel throughout the course of any given day, BI will be computed and implemented for initial attack response levels at the first tier. The second tier will further take into account local preparedness levels which are determined using a plinko chart based on ERC, Haines Index, Red Flag Warning and Fire Weather Watches, Ignition Risk, and Fire Activity. Duty officers may modify response, and when qualified Incident Commanders have visual confirmation of a fire may adjust the initial attack response as needed.

Dispatch Level Worksheet
Moab Interagency Fire Center

FDRA	Burning Index						
BI – Model G (Low Elev. FDRA)	0 - 50		51 - 63		64 - 80		81+
BI – Model G (High Elev. FDRA)	0 - 40		41 - 50		51 - 60		61+
	⇩		⇩		⇩		⇩
Preparedness Level	1 - 5	1 - 2	3 - 5	1 - 2	3 - 5	1 - 2	3 - 5
	⇩		⇩		⇩		⇩
Dispatch Level	Low		Moderate		High		Extreme

Adjective Fire Danger Rating

In 1974, the USFS, BLM and State Forestry organizations established a standard adjective description for five levels of fire danger for use in public information releases and fire prevention signage. For this purpose only, fire danger is expressed using the adjective levels and color codes described below.

Fire Danger Class and Color Code	Description
Low (L) (Green)	Fuels do not ignite readily from small firebrands, although a more intense heat source such as lightning may start fires in duff or punky wood. Fires in open cured grasslands may burn freely a few hours after rain, but woods fires spread slowly by creeping or smoldering, and burn in irregular fingers. There is little danger of spotting.
Moderate (M) (Blue)	Fires can start from most accidental causes, but with the exception of lightning fires in some areas, the number of starts is generally low. Fires in open cured grasslands will burn briskly and spread rapidly on windy days. Timber fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel, especially draped fuel, may burn hot. Short-distance spotting may occur, but is not persistent. Fires are not likely to become serious and control is relatively easy.
High (H) (Yellow)	All fine dead fuels ignite readily and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly and short-distance spotting is common. High-intensity burning may develop on slopes or in concentrations of fine fuels. Fires may become serious and their control difficult unless they are hit hard and fast while small.
Very High (VH) (Orange)	Fires start easily from all causes and, immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high intensity characteristics such as long-distance spotting and fire whirlwinds when they burn in heavier fuels.
Extreme (E) (Red)	Fires start quickly, spread furiously, and burn intensely. All fires are potentially serious. Development into high intensity burning will usually be faster and occur from smaller fires than in the very high fire danger class. Direct attack is rarely possible and may be dangerous except immediately after ignition. Fires that develop headway in heavy slash or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions the only effective and safe control action is on the flanks until the weather changes or the fuel supply lessons.

Agency personnel will use the resultant adjective fire danger information to maintain the awareness of public and industrial entities. The amount of interaction will depend on the magnitude of the adjective fire danger.

- **Adjective Fire Danger Rating Determination**

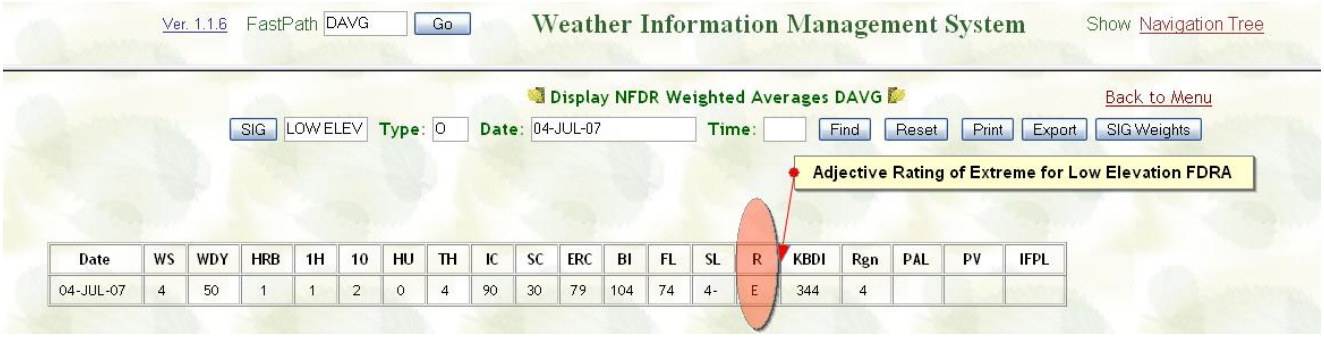
  NFDRS processors automatically calculate the adjective class rating. The adjective rating calculations use the staffing index (such as ERC or BI) of the first priority fuel model listed in the station record in the processor.

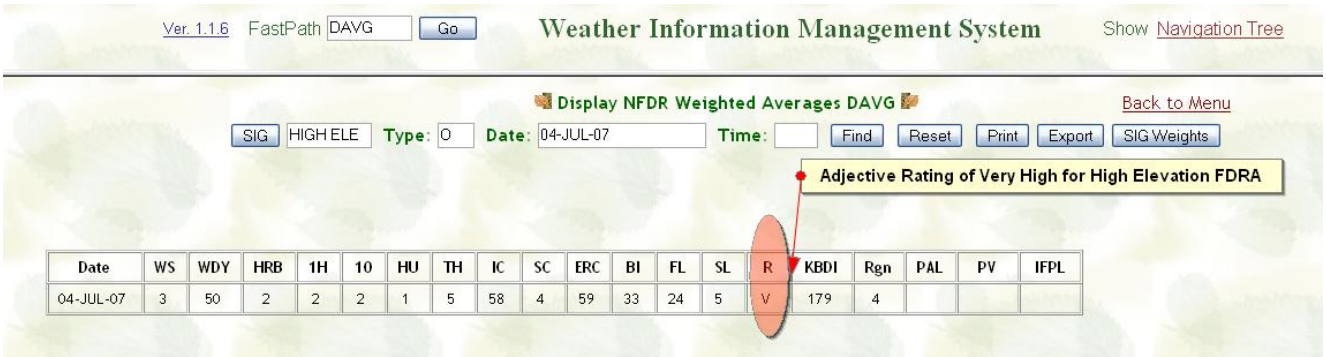
  The actual determination of the daily adjective rating is based on the current or predicted value for a user-selected staffing index and ignition component using the following table.

Staffing Levels	Adjective Fire Danger Rating				
1-, 1, 1+	**L**	**L**	**L**	**M**	**M**
2-, 2, 2+	**L**	**M**	**M**	**M**	**H**
3-, 3, 3+	**M**	**M**	**H**	**H**	**VH**
4-, 4, 4+	**M**	**H**	**VH**	**VH**	**E**
5	**H**	**VH**	**VH**	**E**	**E**
Ignition Component	**0-20**	**21-45**	**46-65**	**66-80**	**81-100**

Given the same weather inputs, the NFDRS processor will calculate the adjective fire danger for selected fuel models.

The adjective fire danger rating for the Low Elevation Mesa Tops and Desert FDRA is a weighted average of weather observations between the Big Indian (422711), Bryson Ridge (422102), Flattop Mtn. (422002) and Kane Gulch (422712) RAWS. A Special Interest Group (SIG) has been created in WIMS that combines the data from these four stations using the first priority NFDRS fuel model from each station catalog. The data is accessed using the WIMS "DAVG" command and entering the SIG name in the query box. If a forecasted adjective fire danger rating is required, enter "F" in the "type" query block. The adjective fire danger rating for the High Elevations Mountains is determined by querying the SIG of Joe's Valley (421602), North Long Point (422710), Bruin Point (421702), and Carpenter Ridge (053808) RAWS. The example below displays the forecasted 1300 adjective fire danger (R)ating of (L)ow for July 4th.





SEASONAL RISK ANALYSIS

Seasonal risk analysis is a comparison of the historic weather/fuels records with current and forecasted weather/fuels information. Seasonal risk analysis is an on-going responsibility for fire program managers. The most reliable indicators of seasonal fire severity have been measurements of fine fuel loading, live fuel moisture, 1000-hour (dead) fuel moisture, and ERC. These levels will be graphically compared to historical maximum values and the average. The graphs will be routinely updated and distributed to fire suppression personnel and dispatch. Seasonal risk analysis information will be used as a basis for pre-positioning critical resources, dispatching resources, and requests for fire severity funding. The following are specific indicators that are useful in accurately predicting fire season severity and duration in the Low Elevation and High Elevation Fire Danger Rating Areas:

- **Fire Activity:** The presence (or absence) of fire activity can be tracked and compared to historical occurrences in order to anticipate severity conditions. The Fire Summary module of Fire Family Plus provides an efficient means to compare monthly fire activity.
- **Live Fuel Moisture:** Live woody (juniper) and herbaceous (sagebrush) fuel moisture plots were established in the Low Elevation FDRA, while live woody conifer and oak brush fuel moistures have been taken in the High Elevation FDRA. Valuable data has been collected and a direct correlation has been drawn between fire intensity (controllability) and live moisture levels. Consequently, fire severity is determined by comparing current trends to historical averages. Comparison of fuel moisture to historical conditions at various locations within the Utah and surrounding areas can be located on the Eastern Great Basin web site: http://www.blm.gov/utah/egbcc/php/fuel_status/public/index.php
- **NFDRS Indicators:** ERC and 1000-hr (3" – 8" diameter dead) fuel are used as the primary indicators to track seasonal trends of fire danger potential. NFDRS fuel model G has been chosen due to its good "fit" with the ERC and 1000-hour models. Other fuel models that might seem to be more appropriate due to their classification (grass/brush) do not correlate very well statistically with the NFDRS models. Consequently, fuel model G was chosen due to its ability to predict fire occurrence, specifically a day when a large fire is likely to occur.
- **Weather Trends:** Seasonal weather assessments rely upon long-range (30-90 day) forecasts. This information is available on the Eastern Great Basin Predictive Service Web Site. The site also contains daily and weekly fire danger assessments.
- **Drought Indicators:** The Keetch-Byrum Drought Index (KBDI) and Palmer Drought Index track soil moisture and have been tailored to meet the needs of fire risk assessment personnel. Current KBDI information is also located on the Eastern Great Basin Web Site. Tracking and comparing 1000-hour fuel moisture is another method to assess drought conditions.
- **Normalized Difference Vegetation Index (NDVI):** NDVI data is satellite imagery, which displays vegetative growth and curing rates of live fuels. The Eastern Great Basin Predictive Service Web Site provides several different ways to analyze current and historical greenness imagery, which can be a significant contributor to seasonal risk assessments.
- **Season-Ending Event:** Historical fire records were examined for both FDRA's to determine the combination of weather parameters that would indicate the end of the fire season. The French Creek WFU in 2007 was used to determine a season ending event in the High Elevation FDRA. The following season-ending events have been identified:

- Low Elevation Mesa Tops and Desert FDRA: three consecutive days when the ERC is less than 40 **and** measurable precipitation has occurred for at least a sum of 12 hours (**or** measurable precipitation has occurred for at least a sum of 25 hours) during that three-day period.
- High Elevation Mountains FDRA: three consecutive days when the ERC is less than 40 **and** measurable precipitation has occurred for at least a sum of 12 hours (**or** measurable precipitation has occurred for at least a sum of 25 hours) during that three-day period. The amount of precipitation on the French Creek WFU was .25 inches.

Utilizing the Term Module of the Rare Event Risk Assessment Process (RERAP) software, the Weibull waiting-time distribution was developed from historical season-ending dates. Appendix I displays a probability graph along with the *event locator* parameters from the FireFamily Plus software dialog box. From this analysis, it can be estimated that there is an equal probability of a season-ending event occurring before or after the 50th percentile date. For the High Elevation Mountain FDRA, this occurs near October 1stth.

THRESHOLDS (EXTREME FIRE DANGER)

Seasonal risk escalation in fuel complexes of the MIFC area relies upon a combination of factors that will ultimately trigger an extreme state of fuel volatility and a high potential for large fire growth or multiple ignition scenarios. These factors are:

- **Fire Activity:** The occurrence of large/multiple fires is the best indicator of severity conditions and the potential for seasonal risk. Any one incident reaching type one or two complexity would be an indicator of severity. Two or more type three incidents within a two to four week period would also be a strong indicator. Three or more initial attack fires in the same day indicate a point where resources are scarce. A progressive approach to assessing seasonal risk will prepare the local unit for these occurrences and the necessary tools will already be in place.
- **Live Fuel Moisture (Juniper):** The average woody fuel moisture of juniper typically fluctuates between 100% (June) and 75% (August). Any readings below 80% indicate increased risk relating to large fire growth and severity conditions. Below average readings may indicate an early or extended fire season.
- **Live Fuel Moisture (Sagebrush):** The average herbaceous fuel moisture of sagebrush in the Low Elevation FDRA fluctuates between 200% (June) and 80% (August). Readings below 80% indicate increased risk relating to large fire growth and severity conditions. Below average readings may indicate an early or extended fire season.
- **NFDRS Thresholds:** The BI threshold for extreme fire potential is 81 (or higher) for the Low Elevation FDRA; the BI threshold for extreme fire potential is 63 (or higher) for the High Elevation Mountains FDRA. It has been statistically proven that large fire events will occur proportionally more often when these thresholds are exceeded. The ERC threshold is 83 (or higher) for the Low Elevation FDRA and 80 (or higher) for the High Elevation Mountains FDRA. Early and late-season readings that trend above average may indicate an extension of the normal fire season.
- **Drought Indicators:** Palmer Drought Index graphics display current drought conditions while KBDI values of 500-800 indicate the potential for rapid curing and drying of the fine fuels and potential for live fuel moisture to drop. The 1000-hour fuel moisture is also a good drought indicator. Values between six and ten percent indicate the potential risk for extreme burning conditions.
- **NDVI:** An analysis of this imagery will assist in the assessment of current fuel moisture conditions and provide historical as well as average greenness comparisons.

FIRE DANGER POCKET CARDS

The Fire Danger Pocket Card is a tool, which can help fire suppression personnel to interpret NFDRS outputs and understand fire danger thresholds for a local area. Pocket cards can relate current NFDRS outputs with the historical average and worst-case values in a specific geographic location. Visiting resources can use the pocket card to familiarize themselves with local fire danger conditions.

Burning Index is a measure of fire controllability (Deeming et al. 1978). NFDRS fuel model G was selected for both FDRA's as it provides the best statistical correlation with large fire occurrence and responds quickly to changing weather and fuel conditions. Refer to Appendix H for an example.

ROLES AND RESPONSIBILITIES

♦ Fire Danger Operating and Preparedness Plan

The Moab Interagency Fire Center (MIFC) manager will ensure that necessary amendments or updates to this plan are completed. Updates to this plan will be made at least every two years and approved by the line officers (or delegates) from each agency. Revised copies will be distributed to the individuals on the primary distribution list.

♦ Suppression Resources

During periods when local preparedness levels are High to Extreme, the Fire Management Officers from each agency will strive to achieve the most efficient and effective organization to meet Fire Management Plan objectives. This may require the pre-positioning of suppression resources. The FMO/AFMO from each agency will also determine the need to request/release off unit resources or support personnel throughout the fire season.

♦ Duty Officer

For the purposes of this plan, a Duty Officer from each agency will be identified to the Moab Interagency Fire Center Manager. The Duty Officer is a designated fire operations specialist, who provides input and guidance regarding preparedness and dispatch levels. It is the Duty Officer's role to interpret and modify the daily preparedness and dispatch levels as required by factors not addressed by this plan. Modifications of the preparedness and/or dispatch levels must be coordinated through the Fire Center Manager. The Duty Officer will keep their respective agency's fire and management staff updated (as needed).

♦ Fire Weather Forecasting

Daily fire weather forecasts will be developed by the National Weather Service, Salt Lake Fire and Grand Junction Weather Forecast Offices, and posted on the Internet and in WIMS for the Moab Utah Interagency Fire Center (MIFC) to retrieve.

♦ NFDRS Outputs and Indices

The MIFC Manager will ensure that the daily fire weather forecast (including NFDRS indices) is retrieved and that the daily preparedness, dispatch, and adjective levels are calculated and distributed.

♦ Risk Analysis Information

The FMO from each agency will ensure that seasonal risk assessments are conducted during the fire season. The risk analysis will include information such as live fuel moisture, 1000-hour fuel moisture, fuel loading, NFDRS (BI/IC/ERC) trends, NDVI imagery, and other pertinent data. This information will be distributed to agency staff and the MIFC Manager. The MIFC Manager and AFMO's will ensure information is posted at fire suppression duty stations.

♦ Weather Station Maintenance

The Remote Sensing Laboratory located at the National Interagency Fire Center (NIFC) maintains and calibrates the BLM RAWS stations on an annual basis. Local BLM Fire personnel are currently qualified as first responders to RAWS malfunctions. The North Zone Fuels AFMO and South Zone Fuels AFMO are responsible for maintaining and calibrating the USFS RAWS stations on an annual basis. Currently a North Zone Fuels Crewmember and South Zone Abajo crewmember are also trained in RAWS maintenance and are assigned to assist with maintenance duties.

♦ **WIMS Access, Daily Observations, and Station Catalog Editing**

The BLM Center Manger is listed as the station owner for both the BLM and Forest Service RAWS. The owner maintains the WIMS Access Control List (ACL). The station owner will ensure appropriate editing of the RAWS catalogs. The MIFC Manager will ensure the timely editing of daily 1300 weather observations of all stations.

♦ **Preparedness, Dispatch, and Adjective Level Guidelines**

Each agency's fire management staff along with the MIFC Manager will be responsible for establishing and reviewing the preparedness, dispatch, and adjective level guidelines on a bi-annual basis (as a minimum).

♦ **Public and Industrial Awareness**

Education and mitigation programs will be implemented by the agency Public Information Officers, Law Enforcement Officers, FMO's, AFMO's, Fire Wardens, and Prevention Specialists based on Preparedness Level Guidelines and direction provided by the agency's FMO and Duty Officer.

♦ **NFDRS and Adjective Fire Danger Break Points**

The FDOP team will review weather and fire data at least every two years (when the FDOP is re-analyzed). The team will ensure that the break points reflect the most accurate information with the concurrence of the FMO's.

♦ **Fire Danger Pocket Cards**

The FMO's will ensure that pocket cards are prepared at least every two years and are in compliance with NWCG standards. The cards will be distributed to all interagency, local and incoming firefighters and Incident Management Teams (IMTs). The pocket cards will be posted on the NUIFC and National Wildfire Coordinating Group (NWCG) pocket card web site (http://fam.nwcg.gov/fam-web/pocketcards/default.htm). Fire suppression supervisors will utilize pockets cards to train and brief suppression personnel.

PROGRAM IMPROVEMENTS

- **Training**
  - Provide FDOP training to cooperators including county fire wardens, cooperating dispatch centers, and fire departments.
  - Train more personnel as first responders to RAWS malfunctions.
  - Establish local WIMS/NFDRS training courses for agency personnel.
  - Emphasize NFDRS training (S-491) at the geographic area level for mid-level fire management personnel.
  - Inform agency fire suppression supervisors of FDOP applications by integrating the training in unit orientation and "Red Card" meetings. At a minimum, this should include Fire Management Officers, Fire Operations Supervisors, Area Managers, and Fire Wardens.
- **RAWS**
  - Maintain potable RAWS when needed
  - Find and input missing weather data.
  - Perform an in-depth analysis of data from USFS weather stations that were excluded from this analysis due to poor quality data. Compare weather station data to other data sources to determine usefulness of data.
- **Technology & Information Management**
  - Integrate preparedness level flow chart into a software package.
  - Improve the MIFC Internet Site where pertinent seasonal risk assessment information can be reviewed.

DRAWDOWN LEVELS

At the various Preparedness Levels, the following resources will be held within the MIFC Area:

Preparedness Level 1 - BLM - One Engine
FS - One Engine
State - Two Engines*

Preparedness Level 2 - BLM - Two Engines or One Engine/Helicopter
FS - One Engine, One Squad
State - Two Engines*

Preparedness Level 3 - BLM - Three Engines or Two Engines/Helicopter
FS - Two Engines, One Squad
State - Two Engines*

Preparedness Level 4 - All Resources excluding the Red Rock Crew and One FS Engine

Preparedness Level 5 - All Resources excluding the Red Rock Crew are staffed

*At levels 1-3, a State engine may be able to leave the area. Check with State at the time of request.

NPS units are restricted to home units only.

Appendix A - Team Members

Fire Danger Operating and Preparedness Plan

Leanard Garcia
Assistant Fire Management Officer
Bureau of Land Management
Moab Field Office

Karen Feary
Dispatch Center Manager
Moab Interagency Fire Center

Renee Jack
Asst. Dispatch Center Manager
Bureau of Land Management
Moab Field Office

Fire Management Officer
Manti La Sal National Forest

Fred Kaminski
Fire Planner
Ashley and Manti La Sal National Forests

Michelle Hawks
Fire GIS Specialist
Manti La Sal National Forests

Rudy Sandoval
Carbon and Emery County Fire Warden
State of Utah

Appendix B - Primary Distribution List

Name	Title	Agency	Mailing Address	E-mail
Shelly Smith	District Manager	BLM	Bureau of Land Management 82 East Dogwood Moab, UT 84532	Shelly_smith@blm.gov
Pamela Brown	Forest Supervisor	USFS	Manti La Sal National Forest 599 West Price River Drive Price, Ut 84501	pbrown@fs.fed.us
Patricia Clabaugh	Field Manager	BLM	Bureau of Land Management 125 South 600 West P.O. Box 7004 Price, UT 84501	pclabaugh@BLM.Gov
Thomas Heinlein	Field Manager	BLM	Bureau of Land Management 435 North Main Street P.O. Box 7 Monticello, UT 84535	theinlein@BLM.GOV
Jeffery Smith	Field Manager	BLM	Bureau of Land Management 82 East Dogwood Moab, UT 84532	
Tracy Dunford	Fire Management Coordinator	State of Utah	Division of Forestry, Fire, & State Lands 1594 W. North Temple Suite 3520 P.O. Box 145703 Salt Lake City, UT 84114-5703	tracydunford@utah.gov
Steve Underwood	Fire Management Officer	NPS	National Park Service P.O. Box 8 Mesa Verde, CO 81330	sunderwood@nps.gov
Leanard Garcia	(acting) Fire Management Officer MIFC Oversight Committee	BLM	Bureau of Land Management 82 East Dogwood Moab, UT 84532	lgarcia@blm.gov
Matthew Meccariello	Eco-Staff Office	USFS	Manti La Sal National Forest 599 West Price River Drive Price, Ut 84501	mmeccariello@fs.fed.us
Karen Feary	Fire Center Manager	BLM	Moab Interagency Dispatch 885 S. Sand Flats Road Moab, Ut 84532	kfeary@BLM.gov

Primary Distribution List, cont.

Jason Johnson	(acting) Area Manager	State of Utah	1165 S Highway 191, Ste 6 Moab, UT 84532	jasonjohnson@utah.gov
Marvin Turner	Area Manager	State of Utah	1311 S Airport Rd Richfield, UT 84701	MarvinTurner@Utah.Gov
Rudy Sandoval	Area Fire Management Officer	State of Utah	319 N Carbonville Rd, Suite D Price, UT 84501	rudysandoval@utah.gov
Fred Johnson	Area Fire Management Officer	State of Utah	460 E 100 S Manti, UT	fredjohnson@utah.gov

The above list indicates key personnel associated with this plan. Copies of the FDOP will also be distributed to Utah Division of Forestry and State Lands Mangers, Manti La Sal National Forest Personnel, Park Service Coordinators, Local fire departments, and surrounding County Cooperators.

Appendix C – Glossary

10-Hr Timelag Fuels	Dead fuels consisting of roundwood in the size range of one quarter to 1 inch in diameter and, very roughly, the layer of litter extending from just below the surface to three-quarters of an inch below the surface.*
100-Hr Timelag Fuels	Dead fuels consisting of roundwood in the size range of 1 to 3 inches in diameter and, very roughly, the forest floor from three quarters of an inch to 4 inches below the surface.*
1000-Hr Timelag Fuels	Dead fuels consisting of roundwood 3 to 8 inches in diameter or the layer of the forest floor more than about 4 inches below the surface or both.*
Adjective Rating	A public information description of the relative severity of the current fire danger situation.
Annual Plant	A plant that lives for one growing season, starting from a seed each year.
Burning Index (BI)	BI is a number related to the contribution of fire behavior to the effort of containing a fire. The BI (difficulty of control) is derived from a combination of Spread Component (how fast it will spread) and Energy Release Component (how much energy will be produced). In this way, it is related to flame length, which, in the Fire Behavior Prediction System, is based on rate of spread and heat per unit area. However, because of differences in the calculations for BI and flame length, they are not the same. The BI is an index that rates fire danger related to potential flame length over a fire danger rating area. The fire behavior prediction system produces flame length predictions for a specific location (Andrews, 1986). The BI is expressed as a numeric value related to potential flame length in feet multiplied by 10. The scale is open-ended which allows the range of numbers to adequately define fire problems, even during low to moderate fire danger.
Climatological Breakpoints	Points on the cumulative distribution of one fire weather/fire danger index without regard to associated fire occurrence/business. They are sometimes referred to as exceedence thresholds.
Duff	The partially decomposed organic material of the forest floor that lies beneath the freshly fallen twigs, needles and leaves. (The F and H layers of the forest soil profile.)
Energy Release Component (ERC)	ERC is a number related to the available energy (BTU) per unit area (square foot) within the flaming front at the head of a fire. Since this number represents the potential "heat release" per unit area in the flaming zone, it can provide guidance to several important fire activities. It may also be considered a composite fuel moisture value as it reflects the contribution that all live and dead fuels have to potential fire intensity. The ERC is a cumulative or "build- up" type of index. As live fuels cure and dead fuels dry, the ERC values get higher thus providing a good reflection of drought conditions. The scale is open-ended or unlimited and, as with other NFDRS components, is relative. Conditions producing an ERC value of 24 represent a potential heat release twice that of conditions resulting in an ERC value of 12.
Equilibrium Moisture Content	The moisture content that a fuel particle will attain if exposed for an infinite period in an environment of specified constant temperature and humidity. When a fuel particle has reached its equilibrium moisture content, the net exchange of moisture between it and its environment is zero.

Fire Business Thresholds	Values of one or more fire weather/fire danger indexes that have been statistically related to occurrence of fires (fire business). Generally, the threshold is a value or range of values where historical fire activity has significantly increased or decreased.
Fire Danger	The resultant descriptor of the combination of both constant and variable factors that affect the ignition, spread, and control difficulty of control of wildfires on an area.
Fire Danger Continuum	The range of possible values for a fire danger index or component, given a set of NFDRS parameters and weather input.
Fire Danger Rating	A system that integrates the effects of existing and expected states of selected fire danger factors into one or more qualitative or numeric indices that reflect an areas protection needs.
Fire Danger Rating Area	A geographic area relatively homogeneous in climate, fuels and topography, tens of thousands of acres in size, within which the fire danger can be assumed to be uniform. Its size and shape is primarily based on influences of fire danger, not political boundaries. It is the basic, on the ground unit for which unique fire danger decisions are made based on fire danger ratings. Weather is represented by one or more NFDRS weather (RAWS) stations.
Fire Weather Forecast Zone	A grouping of fire weather forecast stations that experience the same weather change or trend. Zones are developed by the National Weather Service to assist NWS production of fire weather forecasts or trends for similar stations. Fire weather forecast zones are best thought of as a list of similar weather stations, rather than an area on a map.
Forb	A non- grass-like herbaceous plant.
Fuel Class	A group of fuels possessing common characteristics. In the NFDRS, dead fuels are grouped according to their timelag (1, 10, 100, and 1000 hr) and live fuels are grouped by whether they are herbaceous (annual or perennial) or woody.
Fuel Model	A simulated fuel complex for which all fuel descriptions required by the mathematical fire spread model have been supplied.
Fuel Moisture Content	The water content of a fuel particle expressed as a percent of the oven-dry weight of the particle. Can be expressed for either live or dead fuels.
Fuels	Non-decomposed material, living or dead, derived from herbaceous plants.
Green-up	Green-up within the NFDRS model is defined as the beginning of a new cycle of plant growth. Green- up occurs once a year, except in desert areas where rainy periods can produce a flush of new growth more than once a year. Green- up may be signaled at different dates for different fuel models. Green-up should not be started when the first flush of green occurs in the area. Instead, the vegetation that will be the fire problem (represented by the NFDRS fuel model associated with the weather station) when it matures and cures should be identified. Green- up should start when the majority of this vegetation starts to grow.

Herb	A plant that does not develop woody, persistent tissue but is relatively soft or succulent and sprouts from the base (perennials) or develops from seed (annuals) each year. Included are grasses, forbs, and ferns.
Herbaceous Vegetation Moisture Content	The water content of a live herbaceous plant expressed as a percent of the oven-dry weight of the plant.
Ignition Component (IC)	IC is a rating of the probability that a firebrand will cause a fire requiring suppression action. Since it is expressed as a probability, it ranges on a scale of 0 to 100. An IC of 100 means that every firebrand will cause a fire requiring action if it contacts a receptive fuel.
Keetch-Byram Drought Index (KBDI)	KBDI is a stand-alone index that can be used to measure the effects of seasonal drought on fire potential. The actual numeric value of the index is an estimate of the amount of precipitation (in 100ths of inches) needed to bring the soil back to saturation (a value of 0 is complete saturation of the soil). Since the index only deals with the top 8 inches of the soil profile, the maximum KBDI value is 800 or 8.00 inches of precipitation would be needed to bring the soil back to saturation. The Keetch-Byram Drought Index's relationship to fire danger is that as the index value increases, the vegetation is subjected to increased stress due to moisture deficiency. At higher values, desiccation occurs and live plant material is added to the dead fuel loading on the site. Also, an increasing portion of the duff/litter layer becomes available fuel at higher index values.
Litter	The top layer of the forest floor, typically composed of loose debris such as branches, twigs, and recently fallen leaves or needles; little altered in structure by decomposition. (The layer of the forest soil profile.)
Live Fuels	Naturally occurring fuels whose moisture content is controlled by the physiological processes within the plant. The National Fire Danger Rating System considers only herbaceous plants and woody material small enough (leaves, needles and twigs) to be consumed in the flaming front of a fire.
Moisture of Extinction	The theoretical dead fuel moisture content above which a fire will not spread.
Perennial Plant	A plant that lives for more than two growing seasons. For fire danger rating purposes, biennial plants are classed with perennials.
Roundwood	Boles, stems, or limbs of woody material; that portion of the dead wildland fuel which is roughly cylindrical in shape.
Shrub	A woody perennial plant differing from a perennial herb by its persistent and woody stem; and from a tree by its low stature and habit of branching from the base.
Slash	Branches, bark, tops, cull logs, uprooted stumps, and broken or uprooted trees left on the ground after logging; also debris resulting from thinning or wind storms.
Slope	The rise or fall in terrain measured in feet per 100 feet of horizontal distance measurement, expressed as a percentage.

Spread Component (SC)	SC is a rating of the forward rate of spread of aheadfire. Deeming, et al., (1977), states that "the spread component is numerically equal to the theoretical ideal rate of spread expressed in feet-per-minute". This carefully worded statement indicates both guidelines (it's theoretical) and cautions (it's ideal) that must be used when applying the Spread Component. Wind speed, slope and fine fuel moisture are key inputs in the calculation of the spread component, thus accounting for a high variability from day-to-day. The Spread Component is expressed on an open-ended scale; thus it has no upper limit.
Staffing Level	The basis for decision support for daily staffing of initial attack resources and other activities; a level of readiness and an indicator of daily preparedness.
Surface-Area-to-Volume Ratio	The ratio of the surface area of a fuel particle (in square- ft) to its volume (in cubic-ft). The "finer" the fuel particle, the higher the ratio; for example, for grass this ratio ranges above 2,000; while for a ½ inch diameter stick it is 109.
Timelag	The time necessary for a fuel particle to lose approximately 63 percent of the difference between its initial moisture content and its equilibrium moisture content.
Timelag Fuel Moisture Content	The dead fuel moisture content corresponding to the various timelag fuel classes.
X-1000 Hr Fuel Moisture	X-1000 is the live fuel moisture recovery value derived from the 1000-hr fuel moisture value. It is an independent variable used in the calculation of the herbaceous fuel moisture. The X-1000 is a function of the daily change in the 1000-hour timelag fuel moisture, and the average temperature. Its purpose is to better relate the response of the live herbaceous fuel moisture model to the 1000-hour timelag fuel moisture value. The X-1000 value is designed to decrease at the same rate as the 1000-hour timelag fuel moisture, but to have a slower rate of increase than the 1000-hour timelag fuel moisture during periods of precipitation, hence limiting excessive herbaceous fuel moisture recovery.

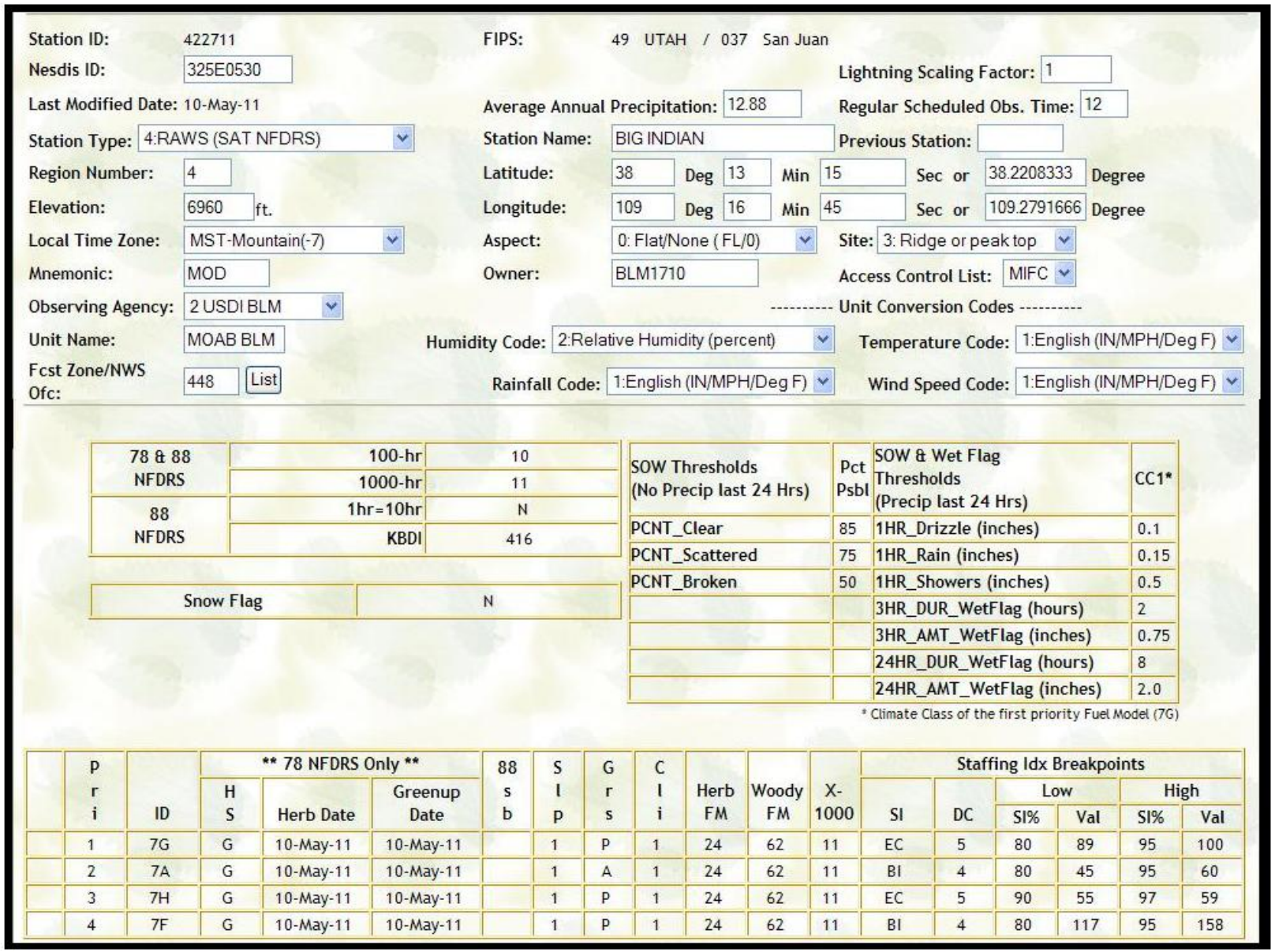
Appendix D – WIMS User ID's

Name	WIMS User ID
Feary, Karen (MIFC)	BLM1710
Jack, Renee	FS7351
Hoffman, Brandon	FS7271
Kaminski, Fred	FS7009
Mattox, Brian	FS7321

For assistance with passwords you may contact the WIMS help desk at 1-800-253-5559 or 208-387-5290, email: fire_help@dms.nwcg.gov.

Appendix E - Weather Station Catalogs

Big Indian (422711)



Station ID:	422711
Nesdis ID:	325E0530
Last Modified Date:	10-May-11
Station Type:	4:RAWS (SAT NFDRS)
Region Number:	4
Elevation:	6960 ft.
Local Time Zone:	MST-Mountain(-7)
Mnemonic:	MOD
Observing Agency:	2 USDI BLM
Unit Name:	MOAB BLM
Fcst Zone/NWS Ofc:	448 List

FIPS:	49 UTAH / 037 San Juan
Average Annual Precipitation:	12.88
Station Name:	BIG INDIAN
Latitude:	38 Deg 13 Min 15 Sec or 38.2208333 Degree
Longitude:	109 Deg 16 Min 45 Sec or 109.2791666 Degree
Aspect:	0: Flat/None (FL/0)
Owner:	BLM1710
Lightning Scaling Factor:	1
Regular Scheduled Obs. Time:	12
Previous Station:	
Site:	3: Ridge or peak top
Access Control List:	MIFC

---------- Unit Conversion Codes ----------

Humidity Code:	2:Relative Humidity (percent)
Rainfall Code:	1:English (IN/MPH/Deg F)
Temperature Code:	1:English (IN/MPH/Deg F)
Wind Speed Code:	1:English (IN/MPH/Deg F)

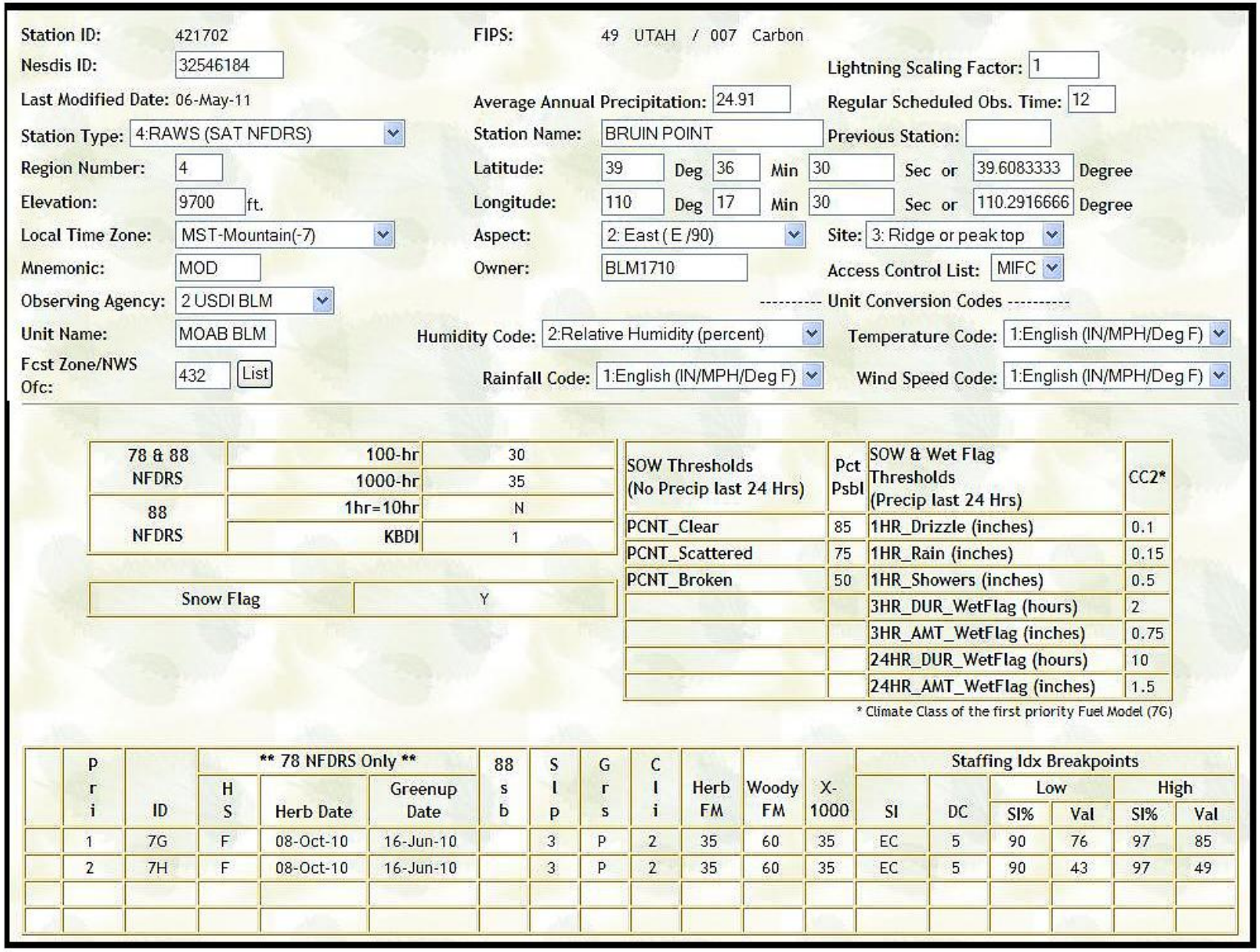
78 & 88 NFDRS	100-hr	10
	1000-hr	11
88 NFDRS	1hr=10hr	N
	KBDI	416
Snow Flag		N

SOW Thresholds (No Precip last 24 Hrs)	Pct Psbl	SOW & Wet Flag Thresholds (Precip last 24 Hrs)	CC1*
PCNT_Clear	85	1HR_Drizzle (inches)	0.1
PCNT_Scattered	75	1HR_Rain (inches)	0.15
PCNT_Broken	50	1HR_Showers (inches)	0.5
		3HR_DUR_WetFlag (hours)	2
		3HR_AMT_WetFlag (inches)	0.75
		24HR_DUR_WetFlag (hours)	8
		24HR_AMT_WetFlag (inches)	2.0

* Climate Class of the first priority Fuel Model (7G)

	Pri	ID	** 78 NFDRS Only **			88 Sb	Slp	Grs	Cli	Herb FM	Woody FM	X-1000	Staffing Idx Breakpoints					
			HS	Herb Date	Greenup Date								SI	DC	Low		High	
															SI%	Val	SI%	Val
	1	7G	G	10-May-11	10-May-11		1	P	1	24	62	11	EC	5	80	89	95	100
	2	7A	G	10-May-11	10-May-11		1	A	1	24	62	11	BI	4	80	45	95	60
	3	7H	G	10-May-11	10-May-11		1	P	1	24	62	11	EC	5	90	55	97	59
	4	7F	G	10-May-11	10-May-11		1	P	1	24	62	11	BI	4	80	117	95	158

Bruin Point (421702)



Station ID:	421702
Nesdis ID:	32546184
Last Modified Date:	06-May-11
Station Type:	4:RAWS (SAT NFDRS)
Region Number:	4
Elevation:	9700 ft.
Local Time Zone:	MST-Mountain(-7)
Mnemonic:	MOD
Observing Agency:	2 USDI BLM
Unit Name:	MOAB BLM
Fcst Zone/NWS Ofc:	432 List

FIPS:	49 UTAH / 007 Carbon
Average Annual Precipitation:	24.91
Station Name:	BRUIN POINT
Latitude:	39 Deg 36 Min 30 Sec or 39.6083333 Degree
Longitude:	110 Deg 17 Min 30 Sec or 110.2916666 Degree
Aspect:	2: East (E /90)
Owner:	BLM1710
Humidity Code:	2:Relative Humidity (percent)
Rainfall Code:	1:English (IN/MPH/Deg F)

Lightning Scaling Factor:	1
Regular Scheduled Obs. Time:	12
Previous Station:	
Site:	3: Ridge or peak top
Access Control List:	MIFC
---------- Unit Conversion Codes ----------	
Temperature Code:	1:English (IN/MPH/Deg F)
Wind Speed Code:	1:English (IN/MPH/Deg F)

78 & 88 NFDRS	100-hr	30
	1000-hr	35
88 NFDRS	1hr=10hr	N
	KBDI	1

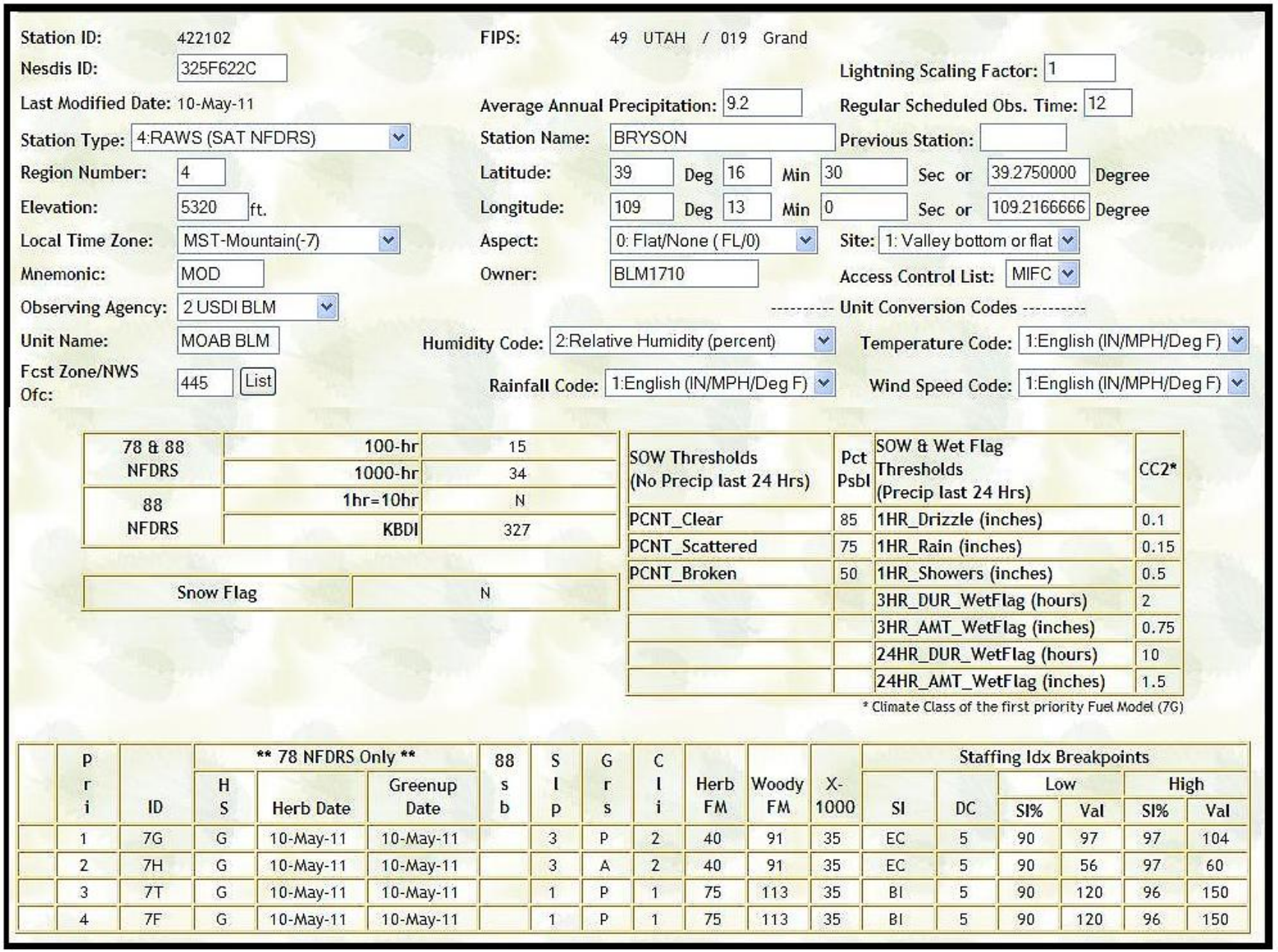
Snow Flag	Y

SOW Thresholds (No Precip last 24 Hrs)	Pct Psbl	SOW & Wet Flag Thresholds (Precip last 24 Hrs)	CC2*
PCNT_Clear	85	1HR_Drizzle (inches)	0.1
PCNT_Scattered	75	1HR_Rain (inches)	0.15
PCNT_Broken	50	1HR_Showers (inches)	0.5
		3HR_DUR_WetFlag (hours)	2
		3HR_AMT_WetFlag (inches)	0.75
		24HR_DUR_WetFlag (hours)	10
		24HR_AMT_WetFlag (inches)	1.5

* Climate Class of the first priority Fuel Model (7G)

	Pri	ID	** 78 NFDRS Only **			88 Sb	Slp	Grs	Cli	Herb FM	Woody FM	X-1000	Staffing Idx Breakpoints					
			HS	Herb Date	Greenup Date								SI	DC	Low		High	
															SI%	Val	SI%	Val
	1	7G	F	08-Oct-10	16-Jun-10		3	P	2	35	60	35	EC	5	90	76	97	85
	2	7H	F	08-Oct-10	16-Jun-10		3	P	2	35	60	35	EC	5	90	43	97	49

Bryson (422102)



Station ID:	422102
Nesdis ID:	325F622C
Last Modified Date:	10-May-11
Station Type:	4:RAWS (SAT NFDRS)
Region Number:	4
Elevation:	5320 ft.
Local Time Zone:	MST-Mountain(-7)
Mnemonic:	MOD
Observing Agency:	2 USDI BLM
Unit Name:	MOAB BLM
Fcst Zone/NWS Ofc:	445 List

FIPS:	49 UTAH / 019 Grand
Average Annual Precipitation:	9.2
Station Name:	BRYSON
Latitude:	39 Deg 16 Min 30 Sec or 39.2750000 Degree
Longitude:	109 Deg 13 Min 0 Sec or 109.2166666 Degree
Aspect:	0: Flat/None (FL/0)
Owner:	BLM1710
Humidity Code:	2:Relative Humidity (percent)
Rainfall Code:	1:English (IN/MPH/Deg F)

Lightning Scaling Factor:	1
Regular Scheduled Obs. Time:	12
Previous Station:	
Site:	1: Valley bottom or flat
Access Control List:	MIFC
---------- Unit Conversion Codes ----------	
Temperature Code:	1:English (IN/MPH/Deg F)
Wind Speed Code:	1:English (IN/MPH/Deg F)

78 & 88 NFDRS	100-hr	15
	1000-hr	34
88 NFDRS	1hr=10hr	N
	KBDI	327

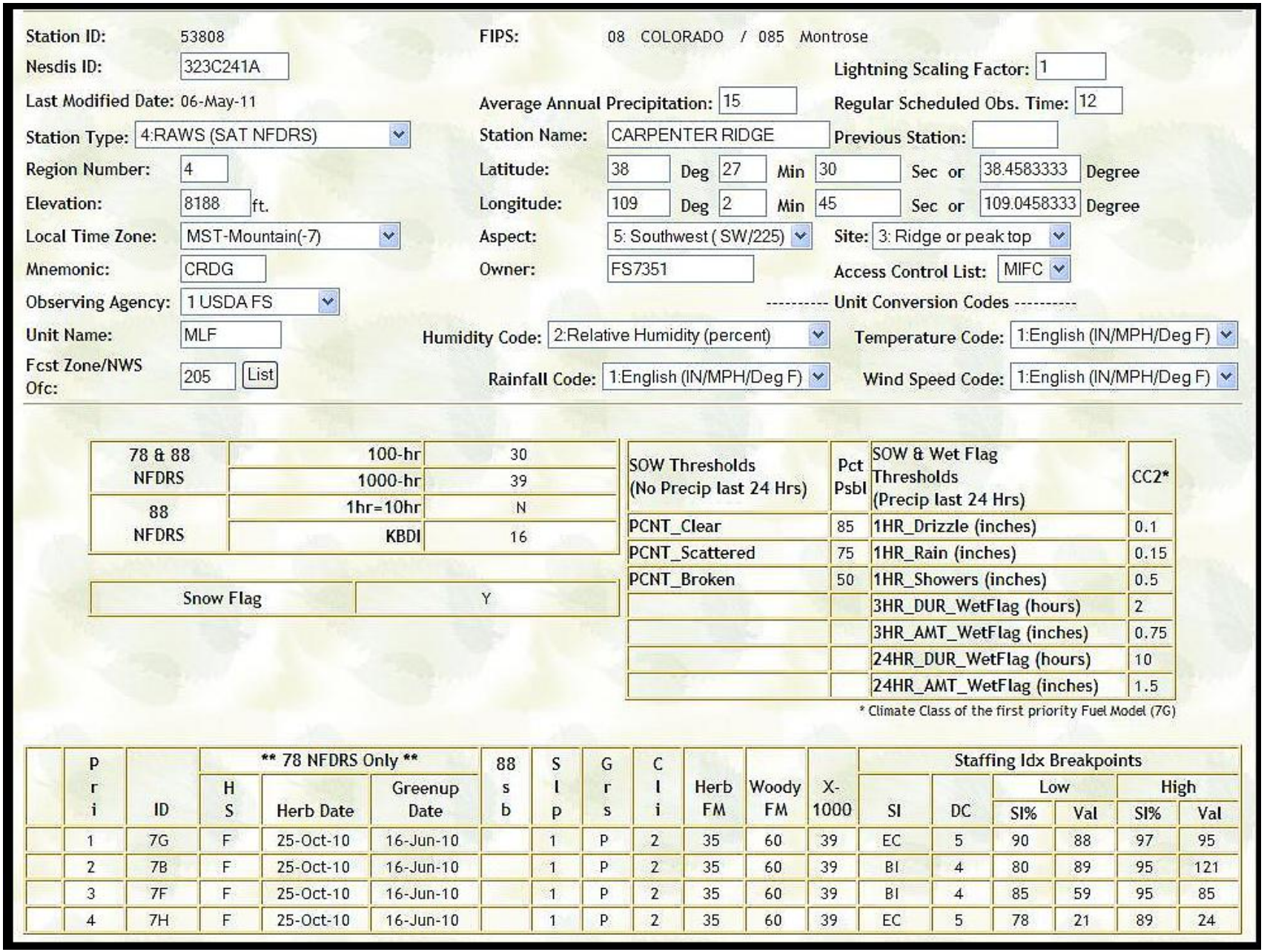
Snow Flag	N

SOW Thresholds (No Precip last 24 Hrs)	Pct Psbl	SOW & Wet Flag Thresholds (Precip last 24 Hrs)	CC2*
PCNT_Clear	85	1HR_Drizzle (inches)	0.1
PCNT_Scattered	75	1HR_Rain (inches)	0.15
PCNT_Broken	50	1HR_Showers (inches)	0.5
		3HR_DUR_WetFlag (hours)	2
		3HR_AMT_WetFlag (inches)	0.75
		24HR_DUR_WetFlag (hours)	10
		24HR_AMT_WetFlag (inches)	1.5

* Climate Class of the first priority Fuel Model (7G)

	Pri	ID	** 78 NFDRS Only **			88 Sub	Slp	Grs	Cli	Herb FM	Woody FM	X-1000	Staffing Idx Breakpoints					
			HS	Herb Date	Greenup Date								SI	DC	Low		High	
															SI%	Val	SI%	Val
	1	7G	G	10-May-11	10-May-11		3	P	2	40	91	35	EC	5	90	97	97	104
	2	7H	G	10-May-11	10-May-11		3	A	2	40	91	35	EC	5	90	56	97	60
	3	7T	G	10-May-11	10-May-11		1	P	1	75	113	35	BI	5	90	120	96	150
	4	7F	G	10-May-11	10-May-11		1	P	1	75	113	35	BI	5	90	120	96	150

Carpenter Ridge (053808)



Station ID: 53808 FIPS: 08 COLORADO / 085 Montrose
Nesdis ID: 323C241A Lightning Scaling Factor: 1
Last Modified Date: 06-May-11 Average Annual Precipitation: 15 Regular Scheduled Obs. Time: 12
Station Type: 4:RAWS (SAT NFDRS) Station Name: CARPENTER RIDGE Previous Station:
Region Number: 4 Latitude: 38 Deg 27 Min 30 Sec or 38.4583333 Degree
Elevation: 8188 ft. Longitude: 109 Deg 2 Min 45 Sec or 109.0458333 Degree
Local Time Zone: MST-Mountain(-7) Aspect: 5: Southwest (SW/225) Site: 3: Ridge or peak top
Mnemonic: CRDG Owner: FS7351 Access Control List: MIFC
Observing Agency: 1 USDA FS ---------- Unit Conversion Codes ----------
Unit Name: MLF Humidity Code: 2:Relative Humidity (percent) Temperature Code: 1:English (IN/MPH/Deg F)
Fcst Zone/NWS Ofc: 205 List Rainfall Code: 1:English (IN/MPH/Deg F) Wind Speed Code: 1:English (IN/MPH/Deg F)

78 & 88 NFDRS	100-hr	30
	1000-hr	39
88 NFDRS	1hr=10hr	N
	KBDI	16

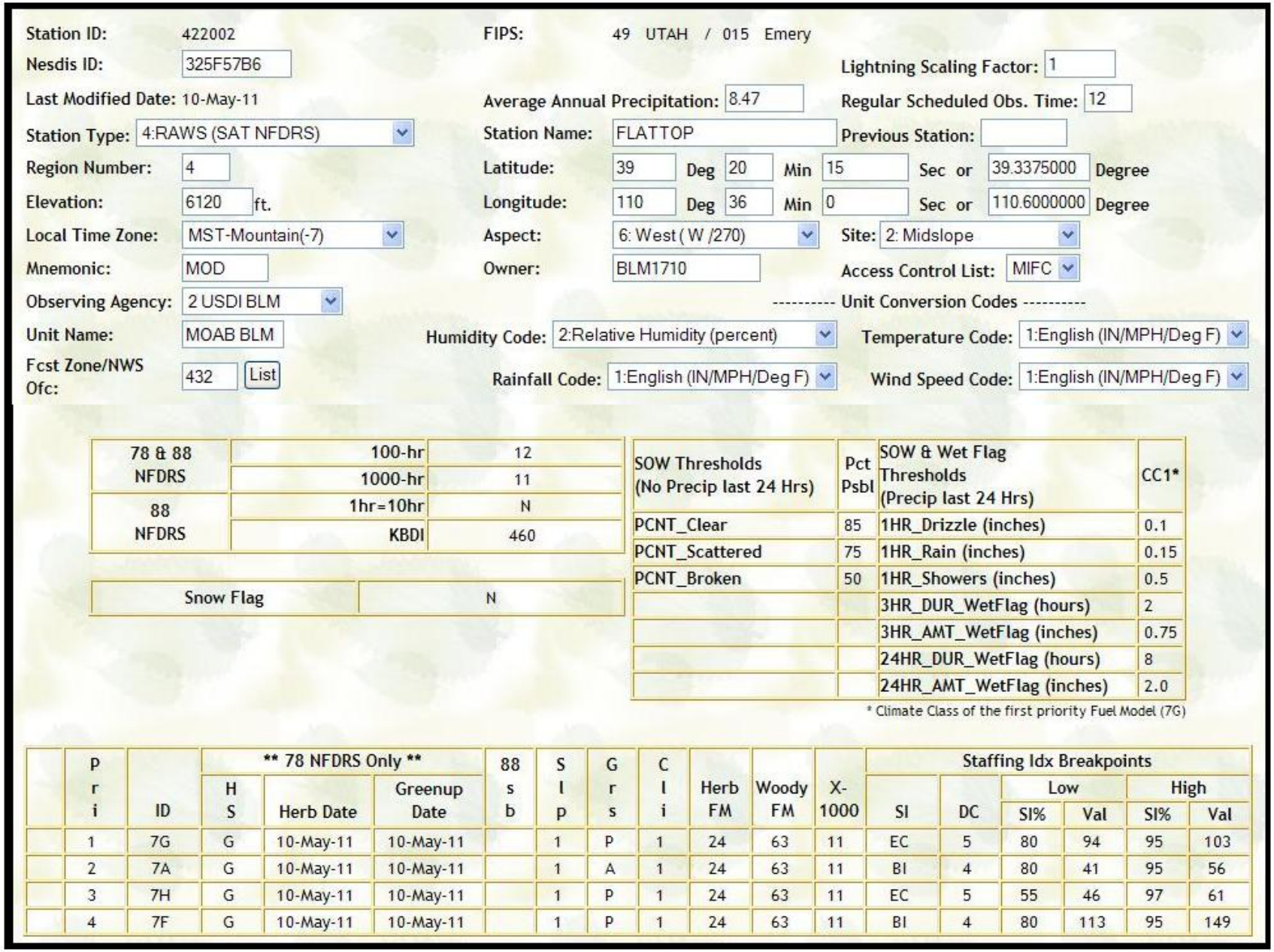
Snow Flag	Y

SOW Thresholds (No Precip last 24 Hrs)	Pct Psbl	SOW & Wet Flag Thresholds (Precip last 24 Hrs)	CC2*
PCNT_Clear	85	1HR_Drizzle (inches)	0.1
PCNT_Scattered	75	1HR_Rain (inches)	0.15
PCNT_Broken	50	1HR_Showers (inches)	0.5
		3HR_DUR_WetFlag (hours)	2
		3HR_AMT_WetFlag (inches)	0.75
		24HR_DUR_WetFlag (hours)	10
		24HR_AMT_WetFlag (inches)	1.5

* Climate Class of the first priority Fuel Model (7G)

	Pri	ID	** 78 NFDRS Only **			88 Sb	Slp	Grs	Cli	Herb FM	Woody FM	X-1000	Staffing Idx Breakpoints					
			HS	Herb Date	Greenup Date								SI	DC	Low		High	
															SI%	Val	SI%	Val
	1	7G	F	25-Oct-10	16-Jun-10		1	P	2	35	60	39	EC	5	90	88	97	95
	2	7B	F	25-Oct-10	16-Jun-10		1	P	2	35	60	39	BI	4	80	89	95	121
	3	7F	F	25-Oct-10	16-Jun-10		1	P	2	35	60	39	BI	4	85	59	95	85
	4	7H	F	25-Oct-10	16-Jun-10		1	P	2	35	60	39	EC	5	78	21	89	24

Flattop Mountain (422002)



Station ID:	422002
Nesdis ID:	325F57B6
Last Modified Date:	10-May-11
Station Type:	4:RAWS (SAT NFDRS)
Region Number:	4
Elevation:	6120 ft.
Local Time Zone:	MST-Mountain(-7)
Mnemonic:	MOD
Observing Agency:	2 USDI BLM
Unit Name:	MOAB BLM
Fcst Zone/NWS Ofc:	432 List

FIPS:	49 UTAH / 015 Emery
Average Annual Precipitation:	8.47
Station Name:	FLATTOP
Latitude:	39 Deg 20 Min 15 Sec or 39.3375000 Degree
Longitude:	110 Deg 36 Min 0 Sec or 110.6000000 Degree
Aspect:	6: West (W /270)
Owner:	BLM1710
Humidity Code:	2:Relative Humidity (percent)
Rainfall Code:	1:English (IN/MPH/Deg F)

Lightning Scaling Factor:	1
Regular Scheduled Obs. Time:	12
Previous Station:	
Site:	2: Midslope
Access Control List:	MIFC
---------- Unit Conversion Codes ----------	
Temperature Code:	1:English (IN/MPH/Deg F)
Wind Speed Code:	1:English (IN/MPH/Deg F)

78 & 88 NFDRS	100-hr	12
	1000-hr	11
88 NFDRS	1hr=10hr	N
	KBDI	460

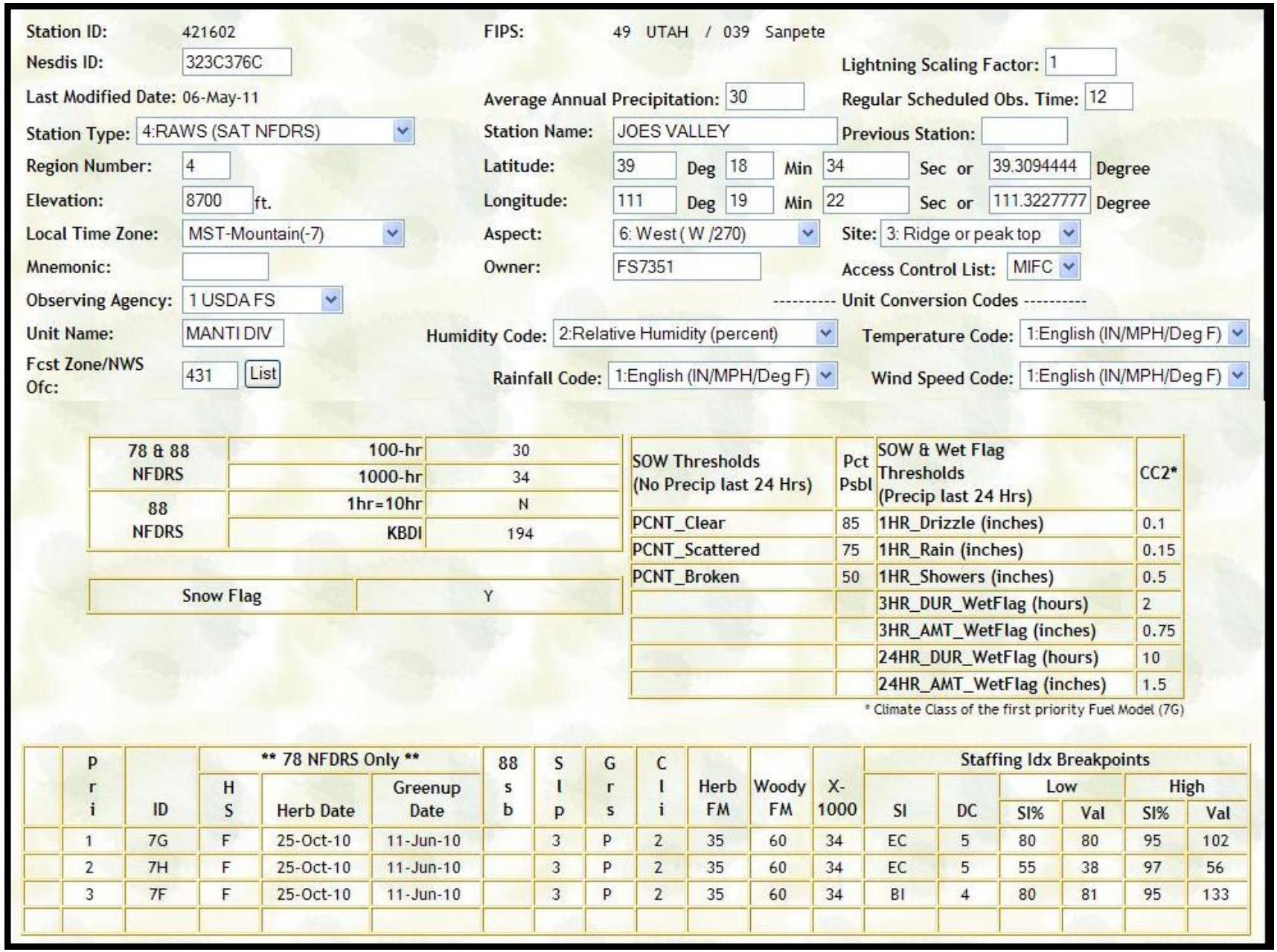
Snow Flag	N

SOW Thresholds (No Precip last 24 Hrs)	Pct Psbl	SOW & Wet Flag Thresholds (Precip last 24 Hrs)	CC1*
PCNT_Clear	85	1HR_Drizzle (inches)	0.1
PCNT_Scattered	75	1HR_Rain (inches)	0.15
PCNT_Broken	50	1HR_Showers (inches)	0.5
		3HR_DUR_WetFlag (hours)	2
		3HR_AMT_WetFlag (inches)	0.75
		24HR_DUR_WetFlag (hours)	8
		24HR_AMT_WetFlag (inches)	2.0

* Climate Class of the first priority Fuel Model (7G)

	Pri	ID	** 78 NFDRS Only **			88 Sb	Slp	Grs	Cli	Herb FM	Woody FM	X-1000	Staffing Idx Breakpoints					
			HS	Herb Date	Greenup Date								SI	DC	Low		High	
															SI%	Val	SI%	Val
	1	7G	G	10-May-11	10-May-11		1	P	1	24	63	11	EC	5	80	94	95	103
	2	7A	G	10-May-11	10-May-11		1	A	1	24	63	11	BI	4	80	41	95	56
	3	7H	G	10-May-11	10-May-11		1	P	1	24	63	11	EC	5	55	46	97	61
	4	7F	G	10-May-11	10-May-11		1	P	1	24	63	11	BI	4	80	113	95	149

Joe's Valley (421602)



Station ID:	421602
Nesdis ID:	323C376C
Last Modified Date:	06-May-11
Station Type:	4:RAWS (SAT NFDRS)
Region Number:	4
Elevation:	8700 ft.
Local Time Zone:	MST-Mountain(-7)
Mnemonic:	
Observing Agency:	1 USDA FS
Unit Name:	MANTI DIV
Fcst Zone/NWS Ofc:	431 List

FIPS:	49 UTAH / 039 Sanpete
Average Annual Precipitation:	30
Station Name:	JOES VALLEY
Latitude:	39 Deg 18 Min 34 Sec or 39.3094444 Degree
Longitude:	111 Deg 19 Min 22 Sec or 111.3227777 Degree
Aspect:	6: West (W /270)
Owner:	FS7351
Humidity Code:	2:Relative Humidity (percent)
Rainfall Code:	1:English (IN/MPH/Deg F)

Lightning Scaling Factor:	1
Regular Scheduled Obs. Time:	12
Previous Station:	
Site:	3: Ridge or peak top
Access Control List:	MIFC
---------- Unit Conversion Codes ----------	
Temperature Code:	1:English (IN/MPH/Deg F)
Wind Speed Code:	1:English (IN/MPH/Deg F)

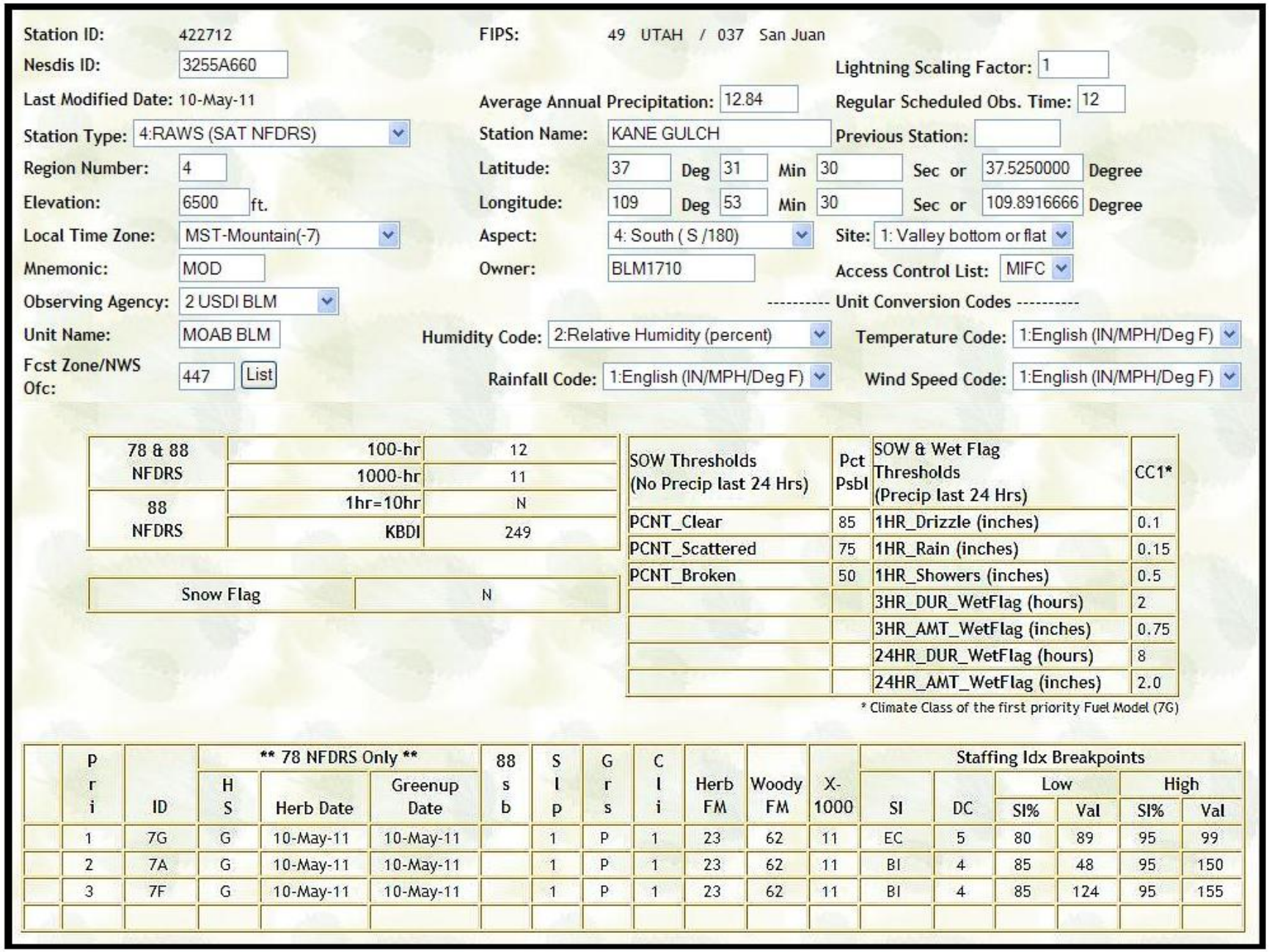
78 & 88 NFDRS	100-hr	30
	1000-hr	34
88 NFDRS	1hr=10hr	N
	KBDI	194
Snow Flag		Y

SOW Thresholds (No Precip last 24 Hrs)	Pct Psbl	SOW & Wet Flag Thresholds (Precip last 24 Hrs)	CC2*
PCNT_Clear	85	1HR_Drizzle (inches)	0.1
PCNT_Scattered	75	1HR_Rain (inches)	0.15
PCNT_Broken	50	1HR_Showers (inches)	0.5
		3HR_DUR_WetFlag (hours)	2
		3HR_AMT_WetFlag (inches)	0.75
		24HR_DUR_WetFlag (hours)	10
		24HR_AMT_WetFlag (inches)	1.5

* Climate Class of the first priority Fuel Model (7G)

	Pri	ID	** 78 NFDRS Only **			88 Sb	Slp	Grs	Cli	Herb FM	Woody FM	X-1000	Staffing Idx Breakpoints					
			HS	Herb Date	Greenup Date								SI	DC	Low		High	
															SI%	Val	SI%	Val
	1	7G	F	25-Oct-10	11-Jun-10		3	P	2	35	60	34	EC	5	80	80	95	102
	2	7H	F	25-Oct-10	11-Jun-10		3	P	2	35	60	34	EC	5	55	38	97	56
	3	7F	F	25-Oct-10	11-Jun-10		3	P	2	35	60	34	BI	4	80	81	95	133

Kane Gulch (422712)



Station ID:	422712
Nesdis ID:	3255A660
Last Modified Date:	10-May-11
Station Type:	4:RAWS (SAT NFDRS)
Region Number:	4
Elevation:	6500 ft.
Local Time Zone:	MST-Mountain(-7)
Mnemonic:	MOD
Observing Agency:	2 USDI BLM
Unit Name:	MOAB BLM
Fcst Zone/NWS Ofc:	447 List

FIPS:	49 UTAH / 037 San Juan
Average Annual Precipitation:	12.84
Station Name:	KANE GULCH
Latitude:	37 Deg 31 Min 30 Sec or 37.5250000 Degree
Longitude:	109 Deg 53 Min 30 Sec or 109.8916666 Degree
Aspect:	4: South (S /180)
Owner:	BLM1710
Humidity Code:	2:Relative Humidity (percent)
Rainfall Code:	1:English (IN/MPH/Deg F)

Lightning Scaling Factor:	1
Regular Scheduled Obs. Time:	12
Previous Station:	
Site:	1: Valley bottom or flat
Access Control List:	MIFC
---------- Unit Conversion Codes ----------	
Temperature Code:	1:English (IN/MPH/Deg F)
Wind Speed Code:	1:English (IN/MPH/Deg F)

78 & 88 NFDRS	100-hr	12
	1000-hr	11
88 NFDRS	1hr=10hr	N
	KBDI	249

Snow Flag	N

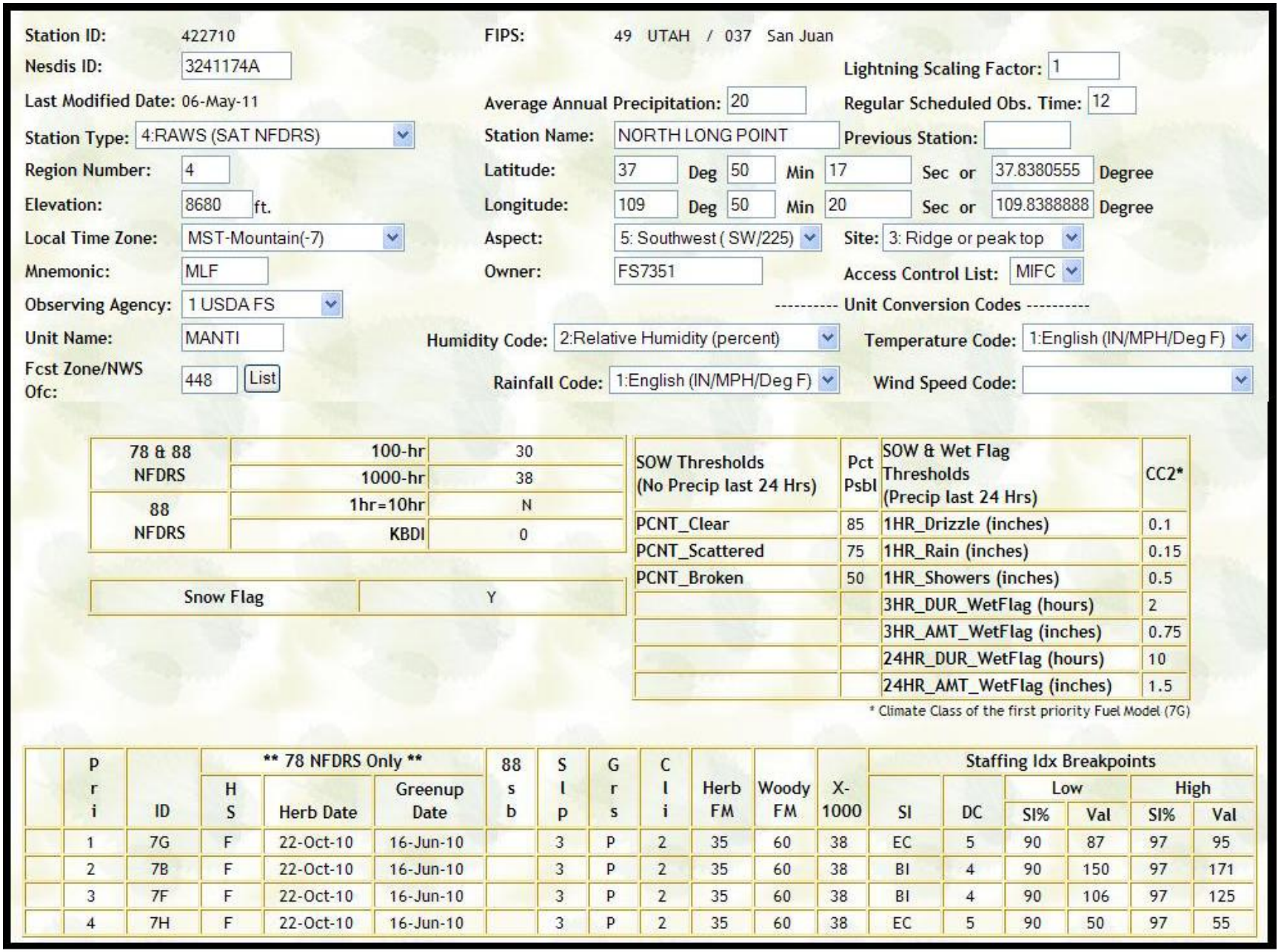
SOW Thresholds (No Precip last 24 Hrs)	Pct Psbl
PCNT_Clear	85
PCNT_Scattered	75
PCNT_Broken	50

SOW & Wet Flag Thresholds (Precip last 24 Hrs)	CC1*
1HR_Drizzle (inches)	0.1
1HR_Rain (inches)	0.15
1HR_Showers (inches)	0.5
3HR_DUR_WetFlag (hours)	2
3HR_AMT_WetFlag (inches)	0.75
24HR_DUR_WetFlag (hours)	8
24HR_AMT_WetFlag (inches)	2.0

* Climate Class of the first priority Fuel Model (7G)

	Pri	ID	** 78 NFDRS Only **			88 Sb	Slp	Grs	Cli	Herb FM	Woody FM	X-1000	Staffing Idx Breakpoints					
			HS	Herb Date	Greenup Date								SI	DC	Low		High	
															SI%	Val	SI%	Val
	1	7G	G	10-May-11	10-May-11		1	P	1	23	62	11	EC	5	80	89	95	99
	2	7A	G	10-May-11	10-May-11		1	P	1	23	62	11	BI	4	85	48	95	150
	3	7F	G	10-May-11	10-May-11		1	P	1	23	62	11	BI	4	85	124	95	155

North Long Point (422710)



Station ID:	422710
Nesdis ID:	3241174A
Last Modified Date:	06-May-11
Station Type:	4:RAWS (SAT NFDRS)
Region Number:	4
Elevation:	8680 ft.
Local Time Zone:	MST-Mountain(-7)
Mnemonic:	MLF
Observing Agency:	1 USDA FS
Unit Name:	MANTI
Fcst Zone/NWS Ofc:	448 List

FIPS:	49 UTAH / 037 San Juan
Average Annual Precipitation:	20
Station Name:	NORTH LONG POINT
Latitude:	37 Deg 50 Min 17 Sec or 37.8380555 Degree
Longitude:	109 Deg 50 Min 20 Sec or 109.8388888 Degree
Aspect:	5: Southwest (SW/225)
Owner:	FS7351
Humidity Code:	2:Relative Humidity (percent)
Rainfall Code:	1:English (IN/MPH/Deg F)

Lightning Scaling Factor:	1
Regular Scheduled Obs. Time:	12
Previous Station:	
Site:	3: Ridge or peak top
Access Control List:	MIFC
---------- Unit Conversion Codes ----------	
Temperature Code:	1:English (IN/MPH/Deg F)
Wind Speed Code:	

78 & 88 NFDRS	100-hr	30
	1000-hr	38
88 NFDRS	1hr=10hr	N
	KBDI	0
Snow Flag		Y

SOW Thresholds (No Precip last 24 Hrs)	Pct Psbl	SOW & Wet Flag Thresholds (Precip last 24 Hrs)	CC2*
PCNT_Clear	85	1HR_Drizzle (inches)	0.1
PCNT_Scattered	75	1HR_Rain (inches)	0.15
PCNT_Broken	50	1HR_Showers (inches)	0.5
		3HR_DUR_WetFlag (hours)	2
		3HR_AMT_WetFlag (inches)	0.75
		24HR_DUR_WetFlag (hours)	10
		24HR_AMT_WetFlag (inches)	1.5

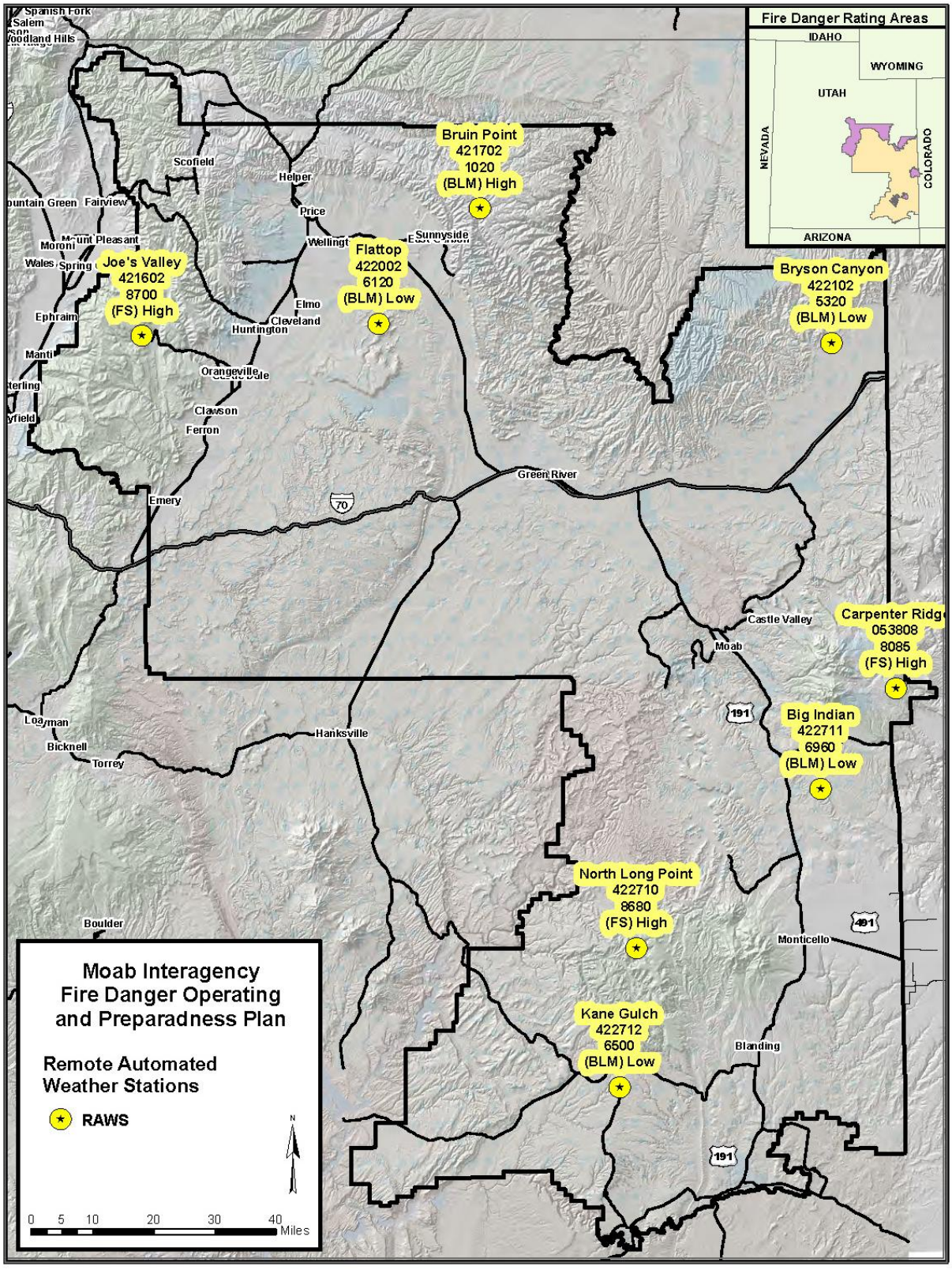
* Climate Class of the first priority Fuel Model (7G)

	Pri	ID	** 78 NFDRS Only **			88 Sub	Slp	Grs	Cli	Herb FM	Woody FM	X-1000	Staffing Idx Breakpoints					
			HS	Herb Date	Greenup Date								SI	DC	Low SI%	Low Val	High SI%	High Val
	1	7G	F	22-Oct-10	16-Jun-10		3	P	2	35	60	38	EC	5	90	87	97	95
	2	7B	F	22-Oct-10	16-Jun-10		3	P	2	35	60	38	BI	4	90	150	97	171
	3	7F	F	22-Oct-10	16-Jun-10		3	P	2	35	60	38	BI	4	90	106	97	125
	4	7H	F	22-Oct-10	16-Jun-10		3	P	2	35	60	38	EC	5	90	50	97	55

Appendix F – Weather Station Data Analysis

Station Name	Status	Agency/Owner	Description
Carpenter Ridge	Active	USFS-UT-MLF	03/18/2004 rain measure of 3.62 inches in one hour and max RH 34% Deleted Day
Sevier Res	Active	BLM-UT-RID	OK
Joes Valley	Active	USFS-UT-MLF	03/18/204 rain measure of 2.24 inches in one hour and max RH 45% deleted day
Joes Valley	Active	USFS-UT-MLF	08/07/04 1300 temp of 131 degrees and max temp of 131 deleted day
Joes Valley	Active	USFS-UT-MLF	09/02/2004 1300 temp of 119 and max temp of 119 deleted day
Joes Valley	Active	USFS-UT-MLF	69 days max temp exceeded 110 degrees in 2004 and 2005 did not delete days
Joes Valley	Active	USFS-UT-MLF	08/29/2004 1300 temp of 117 and max temp of 134 Joe's Valley Dam site Max temp of 78 deleted day
Joes Valley	Active	USFS-UT-MLF	08/09/2004 1300 temp of 111 and max temp of 133 Joe's Valley Dam site Max temp of 86 deleted day
Joes Valley	Active	USFS-UT-MLF	07/19/2004 1300 temp of 110 and max temp of 124 Joe's Valley Dam site Max temp of 80 deleted day
Joes Valley	Active	USFS-UT-MLF	08/11/2004 1300 temp of 106 and max temp of 127 Joe's Valley Dam site Max temp of 84 deleted day
Joes Valley	Active	USFS-UT-MLF	09/10/2004 1300 temp of 106 and max temp of 108 Joe's Valley Dam site Max temp of 78 deleted day
Bruin Point	Active	BLM-UT-Moab	03/19/04 rain measure of 1.37 inches in one hour and max RH 35% deleted day
Signal Peak	Active	USFS-UT-FIF	rain is messed up
North Long Point	Active	USFS-UT-MLF	03/18/04 rain measure of 3.33 inches in one hour and max RH 52% deleted day
North Long Point	Active	USFS-UT-MLF	11/16/03 1300 temp of 130 degrees and max temp of 136 deleted day
North Long Point	Active	USFS-UT-MLF	04/02/04 1300 temp of 120 degrees and max temp of 136 deleted day
North Long Point	Active	USFS-UT-MLF	69 day where max temp exceeded 114 degrees but 1300 temp was normal did not delete days
Big Indian	Active	BLM-UT-Moab	09/14/04 rain measure of 5 inches in one hour and max RH 27% deleted day
Kane Gulch	Active	BLM-UT-Moab	09/14/04 rain measure of 5 inch in one hour and Max RH 38% deleted Day
Flattop	Active	BLM-UT-Moab	09/21/88 rain measure of 8.99 inchs in one hour max RH 71% deleted Day
Flattop	Active	BLM-UT-Moab	09/14/04 rain measure of 5 inchs in one hour max RH 28% deleted Day
Flattop	Active	BLM-UT-Moab	02/08/2007thru 03/19/20071300 RH 1% Max RH 1% Min RH 1% Deleted days
Flattop	Active	BLM-UT-Moab	Deleted all of 2009 data due to tipping bucket malfunction

RAWS Locations (Map)



Appendix G – Preparedness Level Actions

The following Preparedness Level actions are guidelines for agency personnel. They are discretionary in nature and usually will require a consensus between agency personnel prior to implementation.

1. Agency Administrator

Responsible Party	Suggested Action	PL 1	PL 2	PL 3	PL 4	PL 5	Affected Entity
Agency Administrator	Ensure the office staff is notifying MIFC of their fire availability.	√	√	√	√	√	Agency
	Ensure resource advisors are designated and available for fire assignments.	√	√	√	√	√	Agency
	Evaluate work/rest needs of fire staff and crews.	√	√	√	√	√	Agency
	Consider need for fire restriction or closures.				√	√	Public Industry
	Provide appropriate political support to fire staffs regarding the implementation of preparedness level actions.			√	√	√	Agency Public Industry
	Review and transmit severity requests submitted by the FMO to the appropriate level.				√	√	Agency
	Issue guidance to staff indicating severity of the season and increased need and availability for fire support personnel.				√	√	Agency

2. Fire Management Officer

Responsible Party	Suggested Action	PL 1	PL 2	PL 3	PL 4	PL 5	Affected Entity
FMO	If prepardness level is decreasing, consult with FCO/Duty Officer/ MIFC Manager and consider release of pre-positioned or detailed personnel.	√	√	√	√	√	Agency
	Evaluate season severity data (BI and ERC trends for season, fuel loadings, live FM, drought indices, and long term forecasts).	√	√	√	√	√	Agency
	Evaluate crew and staff work/rest requirements.	√	√	√	√	√	Agency
	Brief agency administrator on burning conditions and fire activity.			√	√	√	Agency
	Review geographical and national preparedness levels and evaluate need to suspend local prescribe fire activities.			√	√	√	Agency
	Ensure Prevention Officer has initiated media contacts and public education contacts.			√	√	√	Public Industry
	Ensure agency staff is briefed on increasing fire activity.			√	√	√	Agency
	Brief State/Regional FMO on increasing fire activity.				√	√	Agency
	Consider fire severity request and pre-positioning of resources including: suppression resources, aerial support, aerial supervision, command positions, dispatch, logistical support, and prevention.				√	√	Agency Public Industry
	Evaluate need for fire restrictions or closures with interagency partners.				√	√	Public Industry
	Evaluate season Severity data (BI and ERC trends for season, fuel loadings, live fm, Drought indices and long term forecasts	√	√	√	√	√	Agency
	Request the Agency Administrator to issue guidance to office staff regarding the need for increased fire availability in support positions.				√	√	Agency
	Consult with the State FMO and agency administrator regarding potential need to pre-position a Type 3 or Type 2 Team.					√	Agency

3. Duty Officer

Responsible Party	Suggested Action	PL 1	PL 2	PL 3	PL 4	PL 5	Affected Entity
Duty Officer	Confirm (or Adjust) the Preparedness and Dispatch Levels with the MIFC Manager.	√	√	√	√	√	Agency
	If preparedness level is decreasing, consider releasing pre-positioned and detailed resources.	√	√	√	√	√	Agency
	Ensure incoming pre-position or detailed personnel are briefed on local conditions.	√	√	√	√		Agency
	Evaluate work/rest needs of IA crews.		√	√	√	√	Agency
	Consider aerial detection flight.			√	√	√	Agency
	Evaluate need to change or shift duty hours of IA resources.				√	√	Agency
	Consider suspending prescribed fire operations.				√	√	Agency
	Consider extending staffing beyond normal shift length.				√	√	Agency
	Brief FMO on severity of conditions and consider severity requests.				√	√	Agency
	Consider pre-positioning and/or detailing of additional IA resources from off-unit.				√	√	Agency
	Consider pre-positioning and automatic dispatch of ATGS aircraft.				√	√	Agency
	Consider bringing in local IA resources from scheduled days off.				√	√	Agency
	Consider patrols and pre-positioning of local IA resources in high risk areas.				√	√	Agency
	Consider patrols in camping and recreation areas.				√	√	Public
	Consider suspension of project work away from station or where response time will be delayed				√	√	Agency
	Consider automatic dispatch of, helicopter, SEAT and/or heavy air tankers for IA.					√	Agency

4. Resource Advisor

Responsible Party	Suggested Action	PL 1	PL 2	PL 3	PL 4	PL 5	Affected Entity
	Coordinate efforts with the Duty Officer and Incident Commanders.			√	√	√	Agency

5. Engine/Crew Leaders

Responsible Party	Suggested Action	PL 1	PL 2	PL 3	PL 4	PL 5	Affected Entity
Engine Module Leaders/ Crew Leaders	Ensure IA crews are briefed on local preparedness level, burning conditions, and availability of IA resources and air support.	√	√	√	√	√	Agency
	Evaluate work/rest needs of crew. Ensure days off are taken and request relief if needed.	√	√	√	√	√	Agency
	Ensure that an adequate daily briefing is provided.	√	√	√	√	√	Agency
	Ensure equipment and crew preparedness.	√	√	√	√	√	Agency
	Provide Duty Officer feedback regarding crew fatigue.	√	√	√	√	√	Agency
	Participate in prevention activities as required.	√	√	√	√	√	Public Industry
	Perform required check-ins - including checking-in when moving locations during the day.		√	√	√	√	Agency
	Provide duty officer with feedback regarding unique/unexpected fire behavior, severity conditions, and the need to increase IA capabilities.			√	√	√	Agency

6. AFMO's

Responsible Party	Suggested Action	PL 1	PL 2	PL 3	PL 4	PL 5	Affected Entity
Assistant Fire Staff or AFMO	Ensure that roadside fire danger signs reflect the current adjective fire danger rating.	√	√	√	√	√	Public
	Ensure IA crews are briefed on local preparedness level, burning conditions, and availability of IA resources and air support.	√	√	√	√	√	Agency
	Ensure incoming pre-position or detailed personnel are briefed on local conditions.	√	√	√	√	√	Agency
	Evaluate work/rest needs of crews.			√	√	√	Agency
	Increase patrols in camping and recreation areas.				√	√	Public
	Consider suspension of project work away from station.					√	Agency
	Provide duty officer with feedback regarding unique/unexpected fire behavior and severity conditions and the need to increase IA capabilities.				√	√	Agency

7. MIFC Manger

Responsible Party	Suggested Action	PL 1	PL 2	PL 3	PL 4	PL 5	Affected Entity
MIFC Manager	Determine and broadcast the morning and afternoon preparedness, dispatch, and adjective fire danger levels to interagency fire personnel.	√	√	√	√	√	Agency
	Evaluate work/rest needs of center staff.			√	√	√	Agency
	If preparedness level is decreasing, consider release of pre-positioned or detailed dispatchers and logistical support personnel.	√	√	√			Agency
	Consult with Duty Officer concerning potential for extended staffing beyond normal shift length.				√	√	Agency
	Consider pre-positioning or detail of off-unit IA dispatchers and logistical support personnel.				√	√	Agency
	Consider discussing activation of local area MAC Group.					√	Agency
	Consider ordering a Fire Behavior Analyst.					√	Agency
	Consult with duty officer and FMO regarding potential need for severity request.				√	√	Agency
	Consider bringing additional dispatch personnel in from scheduled days off.				√	√	Agency
	Begin tracking weekly availability of overhead personnel.		√	√	√	√	Agency

	Establish weekly conference calls with FMOs and Operations staff.		√	√	√	√	Agency
	Input weather obs into WIMS.	√	√	√	√	√	Agency

8. Fire Prevention Officer

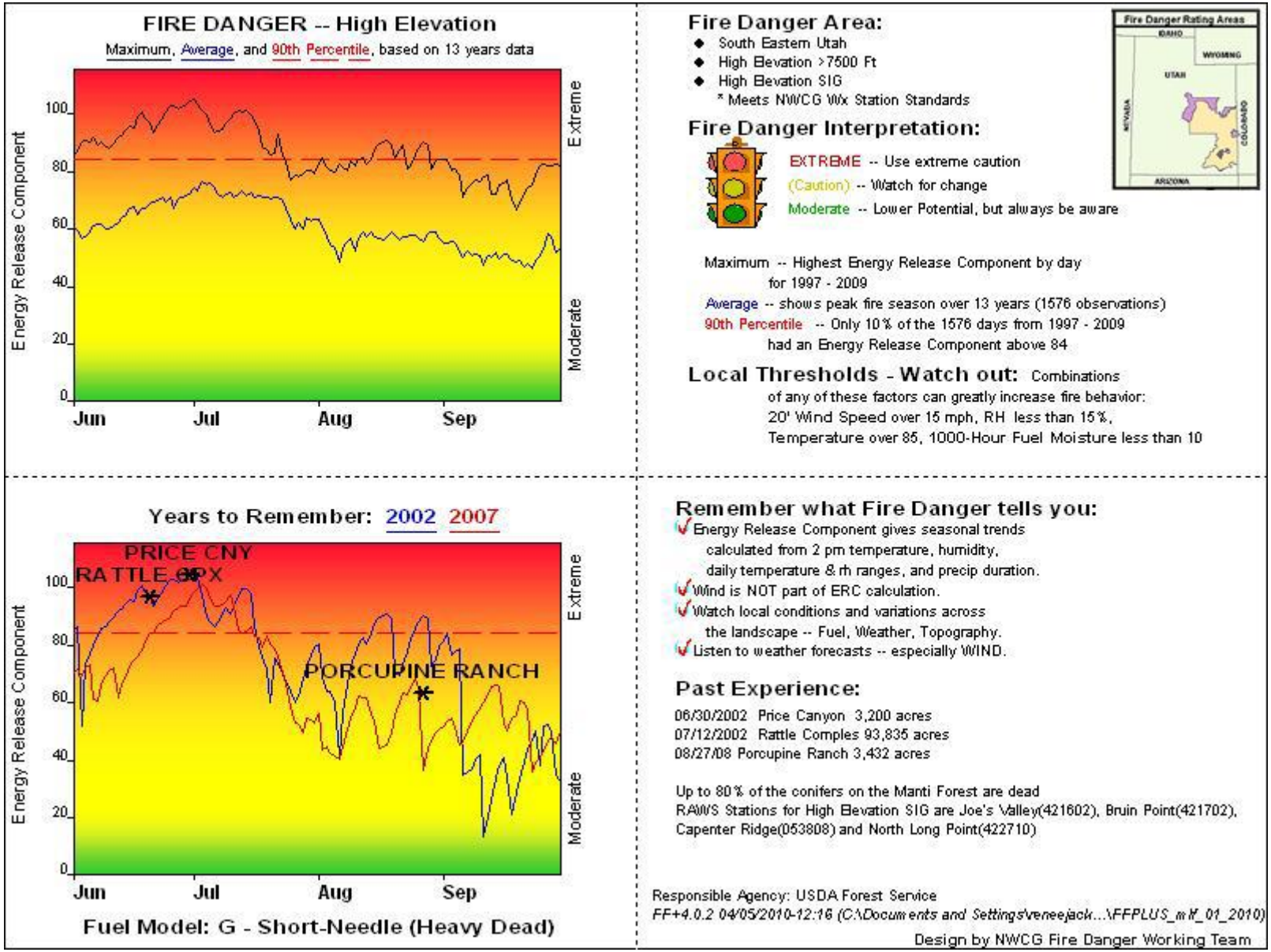
Responsible Party	Suggested Action	PL 1	PL 2	PL 3	PL 4	PL 5	Affected Entity
Fire Prevention Officer	Ensure that roadside fire danger signs reflect the current adjective fire danger rating.	√	√	√	√	√	Public
	Contact local media to make the public aware of the start of fire season and the potential for local fire danger to increase.	√	√	√	√	√	Public Industry
	Provide public and industrial entities with access to fire danger information, closures, restrictions, and warnings.	√	√	√	√	√	Public
	Ensure the public and industrial entities are aware of the policy of fire investigation and potential consequences related with the cost recovery process.	√	√	√	√	√	Public Industry
	Consider need for increased prevention patrols.				√	√	Agency
	Contact local industrial entities to make them aware of fire hazard and risk.				√	√	Industry
	Contact local fire chiefs to make them aware of fire danger.				√	√	Agency
	Consider door-to-door contacts in rural communities or ranch areas.				√	√	Public Industry
	Post signs and warnings in camp and recreation areas.				√	√	Public
	Notify local media of high/extreme fire danger and of the need for increased public caution.				√	√	Public Industry
	Consult with AFMO’s and FMO’s regarding severity requests and the potential need for additional prevention personnel or fire prevention team.				√	√	Agency
	Consult with FMO regarding need for fire restrictions or closures.			√	√	√	Agency Public Industry

9. Law Enforcement Rangers

Responsible Party	Suggested Action	PL 1	PL 2	PL 3	PL 4	PL 5	Affected Entity
Law Enf Rangers	Check-in and notify dispatch of daily availability for fire assignments and location for day.	√	√	√	√	√	Agency
	Consider increased patrol in high fire danger areas, such as campgrounds, OHV areas, shooting areas.				√	√	Public
	Consider pre-positioning of or detailing in fire investigation personnel.				√	√	Agency
	Consult with Fire Prevention Officer and FMO regarding need for fire restrictions or closures.					√	Public Industry

Appendix H – Pocket Cards

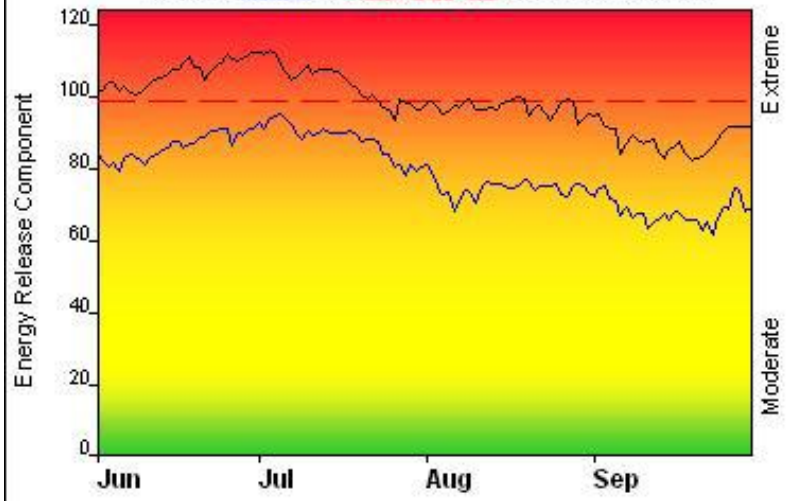
High Elevation Mountains – ERC



Low Elevation Deserts and Mesa Tops – ERC

FIRE DANGER -- Low Elevation Moab Interagency

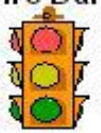
Maximum, Average, and 90th Percentile, based on 13 years data



Fire Danger Area:

- Southeastern Utah
- Low Elevation < 7500 Ft
- Low Elevation SIG
  * Meets NWCG Wx Station Standards

Fire Danger Interpretation:



EXTREME -- Use extreme caution

(Caution) -- Watch for change

Moderate -- Lower Potential, but always be aware

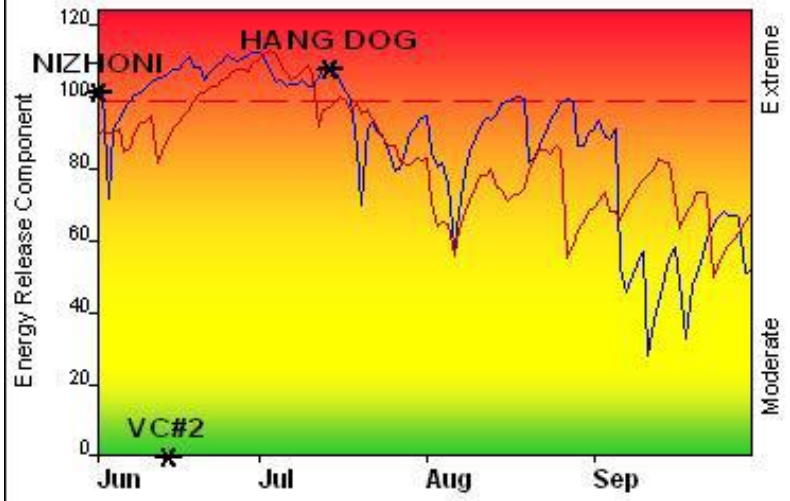
Maximum -- Highest Energy Release Component by day for 1997 - 2009

Average -- shows peak fire season over 13 years (1576 observations)

90th Percentile -- Only 10% of the 1576 days from 1997 - 2009 had an Energy Release Component above 98

Local Thresholds - Watch out: Combinations of any of these factors can greatly increase fire behavior: 20' Wind Speed over 10 mph, RH less than 10%, Temperature over 90, 10-Hour Fuel Moisture less than 5

Years to Remember: 2002 2007



Fuel Model: G - Short-Needle (Heavy Dead)

Remember what Fire Danger tells you:

- ✓ Energy Release Component gives seasonal trends calculated from 2 pm temperature, humidity, daily temperature & rh ranges, and precip duration.
- ✓ Wind is NOT part of ERC calculation.
- ✓ Watch local conditions and variations across the landscape -- Fuel, Weather, Topography.
- ✓ Listen to weather forecasts -- especially WIND.

Past Experience:

07/14/2002	Hangdog	6,000 acres
06/01/2002	Nizhoni	2,354 acres
06/14/1995	VC#2	3,500 acres

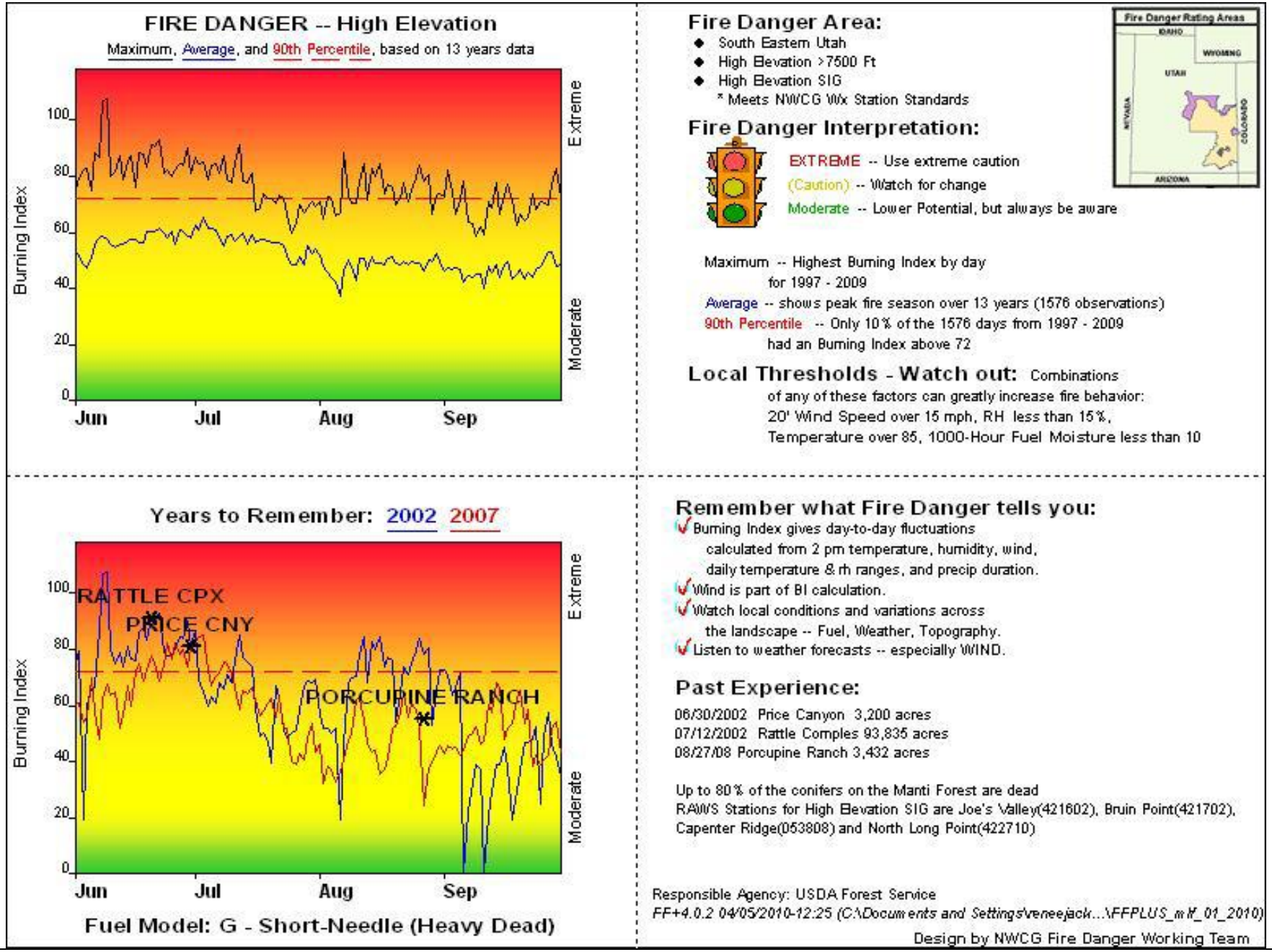
Non-native grasses have increased fire frequency and fire fighters ability to control. RAWS Stations for Low Elevation SIG are Flattop Mtn(422202), Bryson(422102), Big Indian(422711), and Kane Gulch(422712)

Responsible Agency: USDA Forest Service and BLM

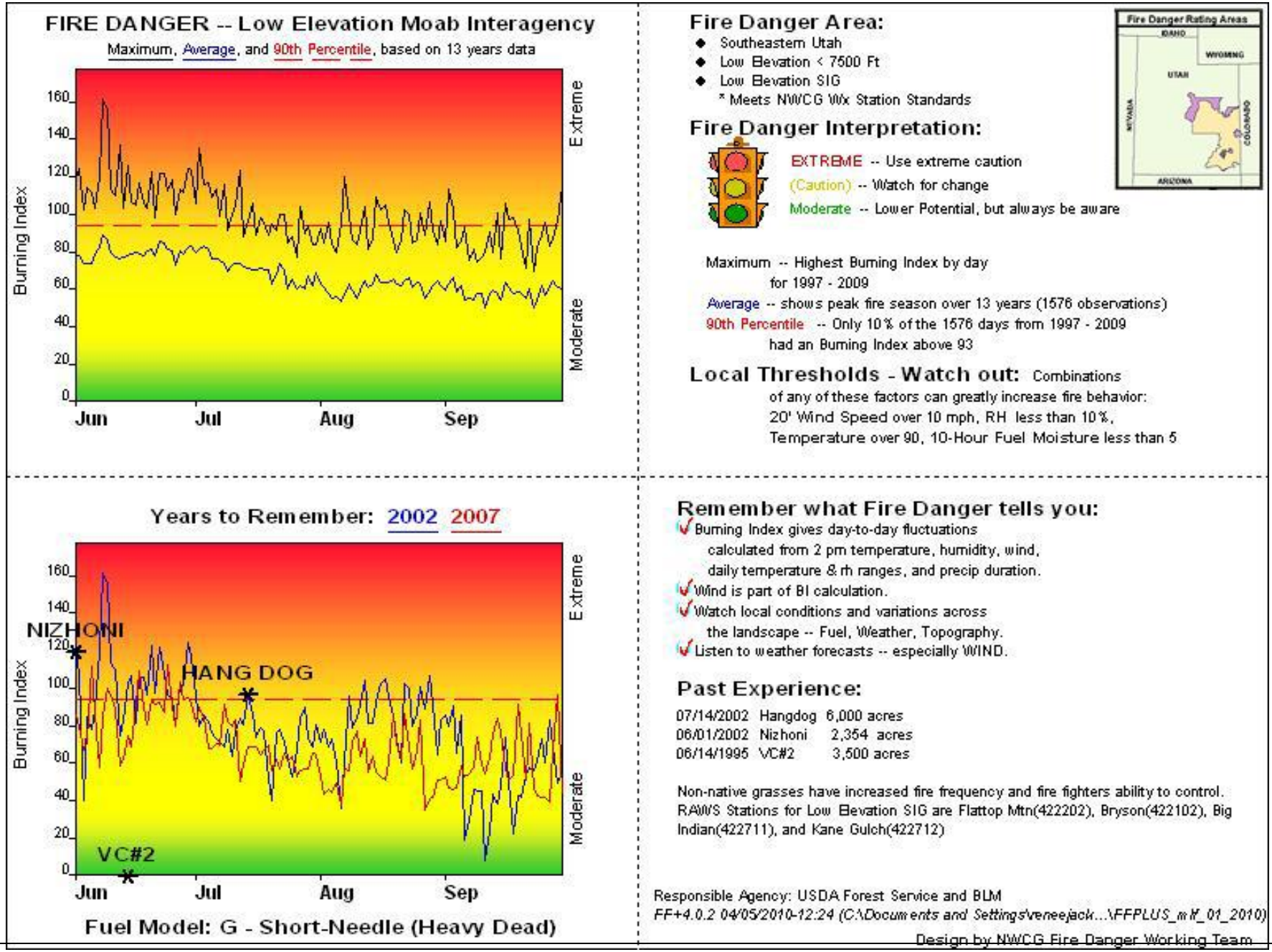
FF+4.0.2 04/05/2010-12:17 (C:\Documents and Settings\veneejack...\FFPLUS_mlf_01_2010)

Design by NWCG Fire Danger Working Team

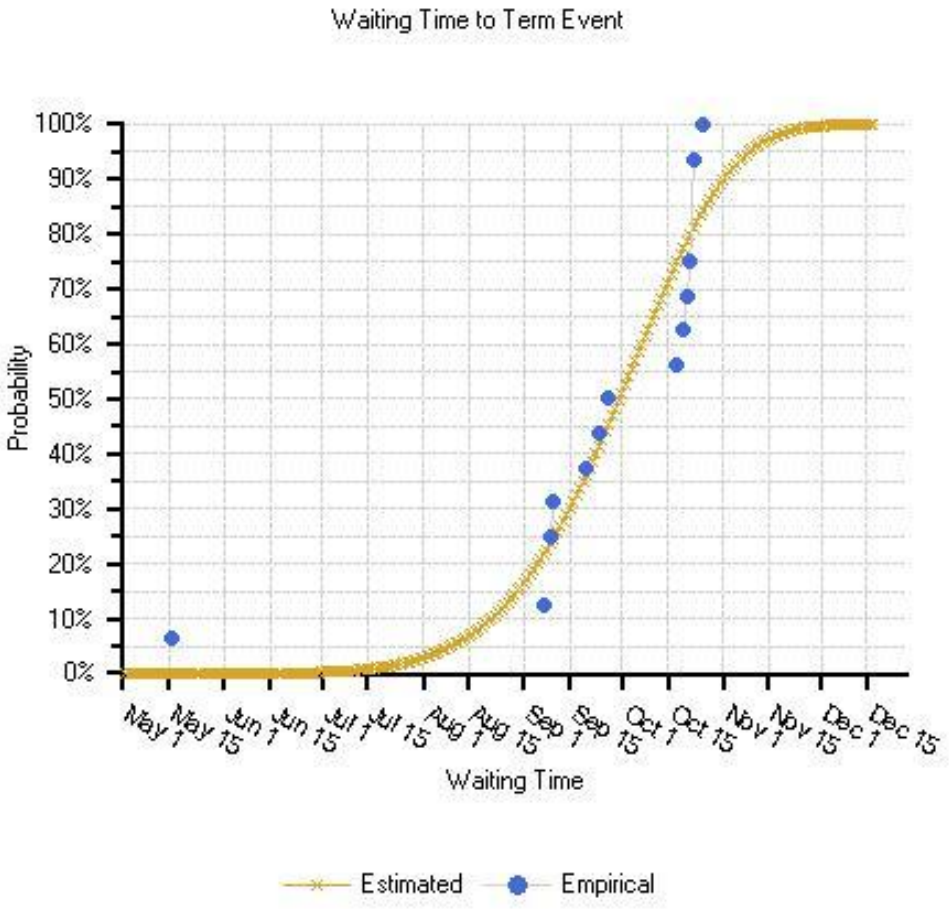
High Elevation Mountains – BI



Low Elevation Deserts and Mesa Tops – BI



Appendix I – RERAP Analysis (Season-Ending Event Probabilities)
High Elevation Mountains



Term Date Comments NFDRS analysis Season Ending event for High Elevation. SIG of Joes Valley and Bruin Point RAWS. Event SUM Precipitation Amount >= 0.25 over 3 day period and AVG ERC <=30.

Appendix J – FireFamily Plus Analysis

Weather Station Analysis

Low Elevation Statistical Analysis Based on ERC

Station Name/Number	Component / Index	NFDRS Fuel Model	Prob Range	R^2	Chi^2	F=Fire Day L=Large Fire Day M=Multi-Fire Day
SIG (Low Elevation) 422002,422102,422711,422712	ERC	G-Short Needle Pine	.05-.57	0.94	7.8	F
SIG (Low Elevation) 422002,422102,422711,422712	ERC	G-Short Needle Pine	.00-.01	0.89	3.9	L
SIG (Low Elevation) 422002,422102,422711,422712	ERC	G-Short Needle Pine	.00-.32	0.9	10.2	M
SIG (Low Elevation) 422002,422102,422711,422712	ERC	A-Western Annual Grasses	.29-.33	0.04	28.2	F
SIG (Low Elevation) 422002,422102,422711,422712	ERC	A-Western Annual Grasses	.01-.04	0.56	5.5	L
SIG (Low Elevation) 422002,422102,422711,422712	ERC	A-Western Annual Grasses	.07-.11	0.1	21.2	M
SIG (Low Elevation) 422002,422102,422711,422712	ERC	C-Pine Grass Savanna	.23-.37	0.33	18.7	F
SIG (Low Elevation) 422002,422102,422711,422712	ERC	C-Pine Grass Savanna	.00-.05	0.52	8.3	L
SIG (Low Elevation) 422002,422102,422711,422712	ERC	C-Pine Grass Savanna	.05-.13	0.24	20.4	M
SIG (Low Elevation) 422002,422102,422711,422712	ERC	F-Intermediate Brush	.22-.46	0.73	9.7	F
SIG (Low Elevation) 422002,422102,422711,422712	ERC	F-Intermediate Brush	.00-.11	0.75	7.8	L
SIG (Low Elevation) 422002,422102,422711,422712	ERC	F-Intermediate Brush	.05-.20	0.51	20.7	M
SIG (Low Elevation) 422002,422102,422711,422712	ERC	H-Short Needle Pine (normal dead)	.13-.49	0.88	8.5	F
SIG (Low Elevation) 422002,422102,422711,422712	ERC	H-Short Needle Pine (normal dead)	.00-.11	0.7	12.6	L
SIG (Low Elevation) 422002,422102,422711,422712	ERC	H-Short Needle Pine (normal dead)	.01-.24	0.79	13.9	M
SIG (Low Elevation) 422002,422102,422711,422712	ERC	Q-Alaskan Black Spruce	.14-.42	0.83	7.7	F
SIG (Low Elevation) 422002,422102,422711,422712	ERC	Q-Alaskan Black Spruce	.00-.08	6.2	14.6	L
SIG (Low Elevation) 422002,422102,422711,422712	ERC	Q-Alaskan Black Spruce	.01-.18	0.62	19.1	M
SIG (Low Elevation) 422002,422102,422711,422712	ERC	T-Sagebrush w/Grass	.20-.42	0.73	10	F
SIG (Low Elevation) 422002,422102,422711,422712	ERC	T-Sagebrush w/Grass	.00-.06	0.68	8.6	L
SIG (Low Elevation) 422002,422102,422711,422712	ERC	T-Sagebrush w/Grass	.04-.17	0.44	25.1	M

High Elevation Statistical Analysis Based on ERC

Station Name/Number	Component / Index	NFDRS Fuel Model	Prob Range	R^2	Chi^ 2	F=Fire Day L=Large Fire Day M=Multi-Fire Day
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	G-Short Needle Pine	.04-.46	0.73	36.6	F
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	G-Short Needle Pine	.00-.14	0.73	11.7	L
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	G-Short Needle Pine	.00-.16	0.58	28.5	M
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	A-Western Annual Grasses	.16-.23	0.1	56.7	F
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	A-Western Annual Grasses	.00-.04	0.93	1.3	L
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	A-Western Annual Grasses	.02-.03	0.02	21	M
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	C-Pine Grass Savanna	.13-.26	0.2	49.8	F
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	C-Pine Grass Savanna	.00-.06	0.5	23.1	L
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	C-Pine Grass Savanna	.02-.05	0.08	32.3	M
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	F-Intermediate Brush	.16-.26	0.12	39.3	F
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	F-Intermediate Brush	.00-.07	0.44	16.8	L
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	F-Intermediate Brush	.03-.03	0.01	29.5	M
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	H-Short Needle Pine (normal dead)	.08-.37	0.61	33	F
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	H-Short Needle Pine (normal dead)	.00-.10	0.68	11.9	L
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	H-Short Needle Pine (normal dead)	.01-.09	0.41	25.9	M
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	Q-Alaskan Black Spruce	.08-.31	0.57	26.6	F
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	Q-Alaskan Black Spruce	.00-.08	0.65	11.8	L
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	Q-Alaskan Black Spruce	.01-.07	0.24	38.9	M
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	T-Sagebrush w/Grass	.15-.25	0.19	39.9	F
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	T-Sagebrush w/Grass	.00-.06	0.61	13.7	L
SIG (High Elevation) 421602, 421702, 053808,422710	ERC	T-Sagebrush w/Grass	.02-.04	0.1	24.5	M

Joe's Valley RAWS Statistical Analysis Based on ERC

Station Name/Number	Component / Index	NFDRS Fuel Model	Prob Range	R^2	Chi^ 2	F=Fire Day L=Large Fire Day M=Multi-Fire Day
Joes Valley (High Elevation) 421602	ERC	G-Short Needle Pine	.11-.51	0.9	4.7	F
Joes Valley (High Elevation) 421602	ERC	G-Short Needle Pine	.00-.08	0.59	6.8	L
Joes Valley (High Elevation) 421602	ERC	G-Short Needle Pine	.01-.25	0.77	10.8	M
Joes Valley (High Elevation) 421602	ERC	A-Western Annual Grasses	.29-.30	0.04	6.9	F
Joes Valley (High Elevation) 421602	ERC	A-Western Annual Grasses	.01-.03	0.99	0	L
Joes Valley (High Elevation) 421602	ERC	A-Western Annual Grasses	.08-.13	0.14	7.4	M
Joes Valley (High Elevation) 421602	ERC	C-Pine Grass Savanna	.31-.32	0	16.6	F
Joes Valley (High Elevation) 421602	ERC	C-Pine Grass Savanna	.01-.03	0.11	11.4	L
Joes Valley (High Elevation) 421602	ERC	C-Pine Grass Savanna	.10-.10	0	11.6	M
Joes Valley (High Elevation) 421602	ERC	F-Intermediate Brush	.30-.34	0.03	14.4	F
Joes Valley (High Elevation) 421602	ERC	F-Intermediate Brush	.01-.07	0.6	5.6	L
Joes Valley (High Elevation) 421602	ERC	F-Intermediate Brush	.09-.10	0	11.9	M
Joes Valley (High Elevation) 421602	ERC	H-Short Needle Pine (normal dead)	.20-.43	0.55	14.5	F
Joes Valley (High Elevation) 421602	ERC	H-Short Needle Pine (normal dead)	.00-.07	0.36	15.5	L
Joes Valley (High Elevation) 421602	ERC	H-Short Needle Pine (normal dead)	.04-.18	0.51	12.8	M
Joes Valley (High Elevation) 421602	ERC	Q-Alaskan Black Spruce	.23-.37	0.48	7.9	F
Joes Valley (High Elevation) 421602	ERC	Q-Alaskan Black Spruce	.00-.05	0.46	7	L
Joes Valley (High Elevation) 421602	ERC	Q-Alaskan Black Spruce	.05-.13	0.33	9	M
Joes Valley (High Elevation) 421602	ERC	T-Sagebrush w/Grass	.31-.32	0	17.2	F
Joes Valley (High Elevation) 421602	ERC	T-Sagebrush w/Grass	.01-.04	0.22	20.6	L
Joes Valley (High Elevation) 421602	ERC	T-Sagebrush w/Grass	.10-.10	0	13.4	M

Bruin Point RAWS Statistical Analysis Based on ERC

Station Name/Number	Component/ Index	NFDRS Fuel Model	Prob Range	R^2	Chi^2	F=Fire Day L=Large Fire Day M=Multi-Fire Day
Bruin Point (High Elevation) 421702	ERC	G-Short Needle Pine	.05-.44	0.75	28.2	F
Bruin Point (High Elevation) 421702	ERC	G-Short Needle Pine	.00-.09	0.81	4.8	L
Bruin Point (High Elevation) 421702	ERC	G-Short Needle Pine	.00-.17	0.63	28	M
Bruin Point (High Elevation) 421702	ERC	A-Western Annual Grasses	.15-.24	0.15	42.7	F
Bruin Point (High Elevation) 421702	ERC	A-Western Annual Grasses	.00-.04	0.65	5.3	L
Bruin Point (High Elevation) 421702	ERC	A-Western Annual Grasses	.02-.05	0.21	14.4	M
Bruin Point (High Elevation) 421702	ERC	C-Pine Grass Savanna	.13-.28	0.3	41	F
Bruin Point (High Elevation) 421702	ERC	C-Pine Grass Savanna	.00-.06	0.47	13.9	L
Bruin Point (High Elevation) 421702	ERC	C-Pine Grass Savanna	.01-.06	0.22	25.5	M
Bruin Point (High Elevation) 421702	ERC	F-Intermediate Brush	.16-.27	0.13	48.5	F
Bruin Point (High Elevation) 421702	ERC	F-Intermediate Brush	.00-.07	0.44	14.1	L
Bruin Point (High Elevation) 421702	ERC	F-Intermediate Brush	.02-.06	0.1	21.9	M
Bruin Point (High Elevation) 421702	ERC	H-Short Needle Pine (normal dead)	.09-.37	0.57	34.8	F
Bruin Point (High Elevation) 421702	ERC	H-Short Needle Pine (normal dead)	.00-.09	0.7	7.3	L
Bruin Point (High Elevation) 421702	ERC	H-Short Needle Pine (normal dead)	.01-.12	0.44	29.6	M
Bruin Point (High Elevation) 421702	ERC	Q-Alaskan Black Spruce	.08-.32	0.56	29.1	F
Bruin Point (High Elevation) 421702	ERC	Q-Alaskan Black Spruce	.00-.07	0.75	6.2	L
Bruin Point (High Elevation) 421702	ERC	Q-Alaskan Black Spruce	.00-.09	0.43	23	M
Bruin Point (High Elevation) 421702	ERC	T-Sagebrush w/Grass	.16-.25	0.17	37.3	F
Bruin Point (High Elevation) 421702	ERC	T-Sagebrush w/Grass	.00-.05	0.62	7.9	L
Bruin Point (High Elevation) 421702	ERC	T-Sagebrush w/Grass	.02-.06	0.21	27.8	M

North Long Point Statistical Analysis Based on ERC

Station Name/Number	Component/ Index	NFDRS Fuel Model	Prob Range	R^2	Chi^2	F=Fire Day L=Large Fire Day M=Multi-Fire Day
North Long Point (High Elevation) 422710	ERC	G-Short Needle Pine	.07-.35	0.68	14.7	F
North Long Point (High Elevation) 422710	ERC	G-Short Needle Pine	.00-.15	0.84	4.3	L
North Long Point (High Elevation) 422710	ERC	G-Short Needle Pine	.00-.10	0.72	6.5	M
North Long Point (High Elevation) 422710	ERC	A-Western Annual Grasses	.17-.22	0.15	4.7	F
North Long Point (High Elevation) 422710	ERC	A-Western Annual Grasses	.00-.10	0.85	1.9	L
North Long Point (High Elevation) 422710	ERC	A-Western Annual Grasses	.02-.04	0.01	3.9	M
North Long Point (High Elevation) 422710	ERC	C-Pine Grass Savanna	.20-.21	0	14.6	F
North Long Point (High Elevation) 422710	ERC	C-Pine Grass Savanna	.00-.08	0.6	10.3	L
North Long Point (High Elevation) 422710	ERC	C-Pine Grass Savanna	.03-.03	0	24.9	M
North Long Point (High Elevation) 422710	ERC	F-Intermediate Brush	.17-.22	0.06	17.7	F
North Long Point (High Elevation) 422710	ERC	F-Intermediate Brush	.00-.07	0.62	8.1	L
North Long Point (High Elevation) 422710	ERC	F-Intermediate Brush	.02-.04	0.08	18.3	M
North Long Point (High Elevation) 422710	ERC	H-Short Needle Pine (normal dead)	.14-.26	0.37	11.4	F
North Long Point (High Elevation) 422710	ERC	H-Short Needle Pine (normal dead)	.00-.12	0.62	14.3	L
North Long Point (High Elevation) 422710	ERC	H-Short Needle Pine (normal dead)	.01-.06	0.15	19.9	M
North Long Point (High Elevation) 422710	ERC	Q-Alaskan Black Spruce	.16-.23	0.19	9.9	F
North Long Point (High Elevation) 422710	ERC	Q-Alaskan Black Spruce	.00-.19	0.68	9.6	L
North Long Point (High Elevation) 422710	ERC	Q-Alaskan Black Spruce	.02-.04	0.05	22.9	M
North Long Point (High Elevation) 422710	ERC	T-Sagebrush w/Grass	.20-.20	0	9.2	F
North Long Point (High Elevation) 422710	ERC	T-Sagebrush w/Grass	.00-.06	0.59	12.1	L
North Long Point (High Elevation) 422710	ERC	T-Sagebrush w/Grass	.03-.03	..00	20.3	M

Carpenter Ridge Statistical Analysis Based on ERC

Station Name/Number	Component/Index	NFDRS Fuel Model	Prob Range	R^2	Chi^2	F=Fire Day L=Large Fire Day M=Multi-Fire Day
Carpenter Ridge (High Elevation) 053808	ERC	G-Short Needle Pine	.09-.33	0.78	6.4	F
Carpenter Ridge (High Elevation) 053808	ERC	G-Short Needle Pine	.00-.12	0.7	8.1	L
Carpenter Ridge (High Elevation) 053808	ERC	G-Short Needle Pine	.00-.11	0.47	19.1	M
Carpenter Ridge (High Elevation) 053808	ERC	A-Western Annual Grasses	.20-.22	0.06	8.4	F
Carpenter Ridge (High Elevation) 053808	ERC	A-Western Annual Grasses	.00-.03	0.96	0.3	L
Carpenter Ridge (High Elevation) 053808	ERC	A-Western Annual Grasses	.03-.04	0.01	8.3	M
Carpenter Ridge (High Elevation) 053808	ERC	C-Pine Grass Savanna	.21-.21	0	22.8	F
Carpenter Ridge (High Elevation) 053808	ERC	C-Pine Grass Savanna	.00-.04	0.5	9.7	L
Carpenter Ridge (High Elevation) 053808	ERC	C-Pine Grass Savanna	.03-.04	0	29.2	M
Carpenter Ridge (High Elevation) 053808	ERC	F-Intermediate Brush	.19-.22	0.03	23.1	F
Carpenter Ridge (High Elevation) 053808	ERC	F-Intermediate Brush	.01-.05	0.37	8.7	L
Carpenter Ridge (High Elevation) 053808	ERC	F-Intermediate Brush	.03-.04	0.01	17.9	M
Carpenter Ridge (High Elevation) 053808	ERC	H-Short Needle Pine (normal dead)	.15-.27	0.37	10.3	F
Carpenter Ridge (High Elevation) 053808	ERC	H-Short Needle Pine (normal dead)	.00-.09	0.56	13.2	L
Carpenter Ridge (High Elevation) 053808	ERC	H-Short Needle Pine (normal dead)	.01-.06	0.2	16.6	M
Carpenter Ridge (High Elevation) 053808	ERC	Q-Alaskan Black Spruce	.17-.24	0.14	10.2	F
Carpenter Ridge (High Elevation) 053808	ERC	Q-Alaskan Black Spruce	.00-.05	0.58	7.1	L
Carpenter Ridge (High Elevation) 053808	ERC	Q-Alaskan Black Spruce	.01-.05	0.18	13.6	M
Carpenter Ridge (High Elevation) 053808	ERC	T-Sagebrush w/Grass	.21-.21	0	12.8	F
Carpenter Ridge (High Elevation) 053808	ERC	T-Sagebrush w/Grass	.00-.04	0.6	5	L
Carpenter Ridge (High Elevation) 053808	ERC	T-Sagebrush w/Grass	.03-.04	0.03	17.3	M

Flattop Mountain RAWS Statistical Analysis Based on ERC

Station Name/Number	Component/Index	NFDRS Fuel Model	Prob Range	R^2	Chi^2	F=Fire Day L=Large Fire Day M=Multi-Fire Day
Flat Top (Low Elevation) 422002	ERC	G-Short Needle Pine	.07-.53	0.89	11.1	F
Flat Top (Low Elevation) 422002	ERC	G-Short Needle Pine	.00-.09	0.73	8.7	L
Flat Top (Low Elevation) 422002	ERC	G-Short Needle Pine	.00-.28	0.74	24.2	M
Flat Top (Low Elevation) 422002	ERC	A-Western Annual Grasses	.27-.35	0.23	18.1	F
Flat Top (Low Elevation) 422002	ERC	A-Western Annual Grasses	.01-.03	0.49	5.1	L
Flat Top (Low Elevation) 422002	ERC	A-Western Annual Grasses	.06-.12	0.03	15.8	M
Flat Top (Low Elevation) 422002	ERC	C-Pine Grass Savanna	.22-.38	0.47	14.8	F
Flat Top (Low Elevation) 422002	ERC	C-Pine Grass Savanna	.00-.05	0.74	3.7	L
Flat Top (Low Elevation) 422002	ERC	C-Pine Grass Savanna	.04-.14	0.45	14.5	M
Flat Top (Low Elevation) 422002	ERC	F-Intermediate Brush	.24-.43	0.58	17.1	F
Flat Top (Low Elevation) 422002	ERC	F-Intermediate Brush	.01-.07	0.79	5	L
Flat Top (Low Elevation) 422002	ERC	F-Intermediate Brush	.06-.16	0.41	24.7	M
Flat Top (Low Elevation) 422002	ERC	H-Short Needle Pine (normal dead)	.14-.46	0.85	9.2	F
Flat Top (Low Elevation) 422002	ERC	H-Short Needle Pine (normal dead)	.00-.08	0.85	3.7	L
Flat Top (Low Elevation) 422002	ERC	H-Short Needle Pine (normal dead)	.02-.22	0.86	7.4	M
Flat Top (Low Elevation) 422002	ERC	Q-Alaskan Black Spruce	.15-.41	0.66	15.5	F
Flat Top (Low Elevation) 422002	ERC	Q-Alaskan Black Spruce	.00-.07	0.77	5.5	L
Flat Top (Low Elevation) 422002	ERC	Q-Alaskan Black Spruce	.01-.18	0.78	9.1	M
Flat Top (Low Elevation) 422002	ERC	T-Sagebrush w/Grass	.22-.40	0.6	15.6	F
Flat Top (Low Elevation) 422002	ERC	T-Sagebrush w/Grass	.00-.05	0.81	3.5	L
Flat Top (Low Elevation) 422002	ERC	T-Sagebrush w/Grass	.04-.15	0.62	11.5	M

Big Indian RAWS Statistical Analysis Based on ERC

Station Name/Number	Component/Index	NFDRS Fuel Model	Prob Range	R^2	Chi^2	F=Fire Day L=Large Fire Day M=Multi-Fire Day
Big Indian (Low Elevation) 422711	ERC	G-Short Needle Pine	..08-.53	0.82	16.1	F
Big Indian (Low Elevation) 422711	ERC	G-Short Needle Pine	.00-.10	0.83	4.8	L
Big Indian (Low Elevation) 422711	ERC	G-Short Needle Pine	.01-.25	0.64	29.2	M
Big Indian (Low Elevation) 422711	ERC	A-Western Annual Grasses	.31-.33	0.01	10.9	F
Big Indian (Low Elevation) 422711	ERC	A-Western Annual Grasses	.01-.04	0.67	2.7	L
Big Indian (Low Elevation) 422711	ERC	A-Western Annual Grasses	.08-.10	0.06	12.7	M
Big Indian (Low Elevation) 422711	ERC	C-Pine Grass Savanna	.30-.33	0.05	14.8	F
Big Indian (Low Elevation) 422711	ERC	C-Pine Grass Savanna	.00-.04	0.48	5.6	L
Big Indian (Low Elevation) 422711	ERC	C-Pine Grass Savanna	.09-.09	0	19.7	M
Big Indian (Low Elevation) 422711	ERC	F-Intermediate Brush	.28-.38	0.42	9.4	F
Big Indian (Low Elevation) 422711	ERC	F-Intermediate Brush	.00-.07	0.83	0.38	L
Big Indian (Low Elevation) 422711	ERC	F-Intermediate Brush	.07-.12	0.14	24.2	M
Big Indian (Low Elevation) 422711	ERC	H-Short Needle Pine (normal dead)	.19-.43	0.83	6.1	F
Big Indian (Low Elevation) 422711	ERC	H-Short Needle Pine (normal dead)	.00-.09	0.69	9.5	L
Big Indian (Low Elevation) 422711	ERC	H-Short Needle Pine (normal dead)	.04-.16	0.52	17.6	M
Big Indian (Low Elevation) 422711	ERC	Q-Alaskan Black Spruce	.22-.37	0.51	13.4	F
Big Indian (Low Elevation) 422711	ERC	Q-Alaskan Black Spruce	.00-.07	0.64	11.3	L
Big Indian (Low Elevation) 422711	ERC	Q-Alaskan Black Spruce	.05-.12	0.3	20.6	M
Big Indian (Low Elevation) 422711	ERC	T-Sagebrush w/Grass	.26-.37	0.64	4.3	F
Big Indian (Low Elevation) 422711	ERC	T-Sagebrush w/Grass	.00-.05	0.74	4.7	L
Big Indian (Low Elevation) 422711	ERC	T-Sagebrush w/Grass	.06-.12	0.19	21.5	M

Bryson Ridge RAWS Statistical Analysis Based on ERC

Station Name/Number	Component/Index	NFDRS Fuel Model	Prob Range	R^2	Chi^2	F=Fire Day L=Large Fire Day M=Multi-Fire Day
Bryson Ridge (Low Elevation) 422102	ERC	G-Short Needle Pine	.05-.58	0.79	31.3	F
Bryson Ridge (Low Elevation) 422102	ERC	G-Short Needle Pine	.00-.10	0.79	6.2	L
Bryson Ridge (Low Elevation) 422102	ERC	G-Short Needle Pine	.00-.35	0.85	16.5	M
Bryson Ridge (Low Elevation) 422102	ERC	A-Western Annual Grasses	.27-.35	0.21	23.6	F
Bryson Ridge (Low Elevation) 422102	ERC	A-Western Annual Grasses	.01-.04	0.76	2.4	L
Bryson Ridge (Low Elevation) 422102	ERC	A-Western Annual Grasses	.06-.12	0.22	22.4	M
Bryson Ridge (Low Elevation) 422102	ERC	C-Pine Grass Savanna	.21-.39	0.43	23.5	F
Bryson Ridge (Low Elevation) 422102	ERC	C-Pine Grass Savanna	.00-.04	0.65	4.4	L
Bryson Ridge (Low Elevation) 422102	ERC	C-Pine Grass Savanna	.03-.15	0.41	23.7	M
Bryson Ridge (Low Elevation) 422102	ERC	F-Intermediate Brush	.22-.48	0.64	24.5	F
Bryson Ridge (Low Elevation) 422102	ERC	F-Intermediate Brush	.00-.08	0.68	12.2	L
Bryson Ridge (Low Elevation) 422102	ERC	F-Intermediate Brush	.04-.20	0.51	32	M
Bryson Ridge (Low Elevation) 422102	ERC	H-Short Needle Pine (normal dead)	.12-.51	0.7	32.3	F
Bryson Ridge (Low Elevation) 422102	ERC	H-Short Needle Pine (normal dead)	.00-.10	0.72	9.3	L
Bryson Ridge (Low Elevation) 422102	ERC	H-Short Needle Pine (normal dead)	.01-.28	0.72	26.5	M
Bryson Ridge (Low Elevation) 422102	ERC	Q-Alaskan Black Spruce	.13-.43	0.66	25.9	F
Bryson Ridge (Low Elevation) 422102	ERC	Q-Alaskan Black Spruce	.00-.07	0.56	17.5	L
Bryson Ridge (Low Elevation) 422102	ERC	Q-Alaskan Black Spruce	.01-.21	0.63	28.1	M
Bryson Ridge (Low Elevation) 422102	ERC	T-Sagebrush w/Grass	.19-.43	0.64	24.7	F
Bryson Ridge (Low Elevation) 422102	ERC	T-Sagebrush w/Grass	.00-.05	0.69	7.4	L
Bryson Ridge (Low Elevation) 422102	ERC	T-Sagebrush w/Grass	.03-.18	0.48	37.8	M

Kane Gulch RAWS Statistical Analysis Based on ERC

Station Name/Number	Component/Index	NFDRS Fuel Model	Prob Range	R^2	Chi^2	F=Fire Day L=Large Fire Day M=Multi-Fire Day
Kane Gulch (Low Elevation) 422712	ERC	G-Short Needle Pine	.08-.56	0.9	10.5	F
Kane Gulch (Low Elevation) 422712	ERC	G-Short Needle Pine	.00-.07	0.82	3.9	L
Kane Gulch (Low Elevation) 422712	ERC	G-Short Needle Pine	.01-.29	0.7	25.7	M
Kane Gulch (Low Elevation) 422712	ERC	A-Western Annual Grasses	.31-.33	0	61.1	F
Kane Gulch (Low Elevation) 422712	ERC	A-Western Annual Grasses	.01-.02	0.07	11.2	L
Kane Gulch (Low Elevation) 422712	ERC	A-Western Annual Grasses	.09-.09	0	33	M
Kane Gulch (Low Elevation) 422712	ERC	C-Pine Grass Savanna	.28-.34	0.04	55.7	F
Kane Gulch (Low Elevation) 422712	ERC	C-Pine Grass Savanna	.01-.03	0.09	24.1	L
Kane Gulch (Low Elevation) 422712	ERC	C-Pine Grass Savanna	.07-.10	0.05	50.3	M
Kane Gulch (Low Elevation) 422712	ERC	F-Intermediate Brush	.28-.37	0.19	28.6	F
Kane Gulch (Low Elevation) 422712	ERC	F-Intermediate Brush	.01-.04	0.45	9.1	L
Kane Gulch (Low Elevation) 422712	ERC	F-Intermediate Brush	.07-.13	0.2	22.4	M
Kane Gulch (Low Elevation) 422712	ERC	H-Short Needle Pine (normal dead)	.16-.46	0.72	18	F
Kane Gulch (Low Elevation) 422712	ERC	H-Short Needle Pine (normal dead)	.00-.06	0.59	6.2	L
Kane Gulch (Low Elevation) 422712	ERC	H-Short Needle Pine (normal dead)	.02-.20	0.57	23.4	M
Kane Gulch (Low Elevation) 422712	ERC	Q-Alaskan Black Spruce	.18-.39	0.55	21.5	F
Kane Gulch (Low Elevation) 422712	ERC	Q-Alaskan Black Spruce	.00-.04	0.58	6.7	L
Kane Gulch (Low Elevation) 422712	ERC	Q-Alaskan Black Spruce	.03-.14	0.41	27	M
Kane Gulch (Low Elevation) 422712	ERC	T-Sagebrush w/Grass	.24-.38	0.31	32.7	F
Kane Gulch (Low Elevation) 422712	ERC	T-Sagebrush w/Grass	.01-.03	0.32	9.5	L
Kane Gulch (Low Elevation) 422712	ERC	T-Sagebrush w/Grass	.05-.13	0.3	32.4	M

Low Elevation Statistical Analysis Based on Burning Index

Station Name/Number	Component/Index	NFDRS Fuel Model	Prob Range	R^2	Chi^2	F=Fire Day L=Large Fire Day M=Multi-Fire Day
SIG (Low Elevation) 422002,422102,422711,422712	BI	G-Short Needle Pine	.19-.57	0.45	30.8	F
SIG (Low Elevation) 422002,422102,422711,422712	BI	G-Short Needle Pine	.00-.32	0.66	8.9	L
SIG (Low Elevation) 422002,422102,422711,422712	BI	G-Short Needle Pine	.04-.30	0.33	36.8	M
SIG (Low Elevation) 422002,422102,422711,422712	BI	A-Western Annual Grasses	.28-.38	0.1	30.4	F
SIG (Low Elevation) 422002,422102,422711,422712	BI	A-Western Annual Grasses	.01-.11	0.48	14.6	L
SIG (Low Elevation) 422002,422102,422711,422712	BI	A-Western Annual Grasses	.08-.12	0.03	37.7	M
SIG (Low Elevation) 422002,422102,422711,422712	BI	C-Pine Grass Savanna	.24-.48	0.3	26.2	F
SIG (Low Elevation) 422002,422102,422711,422712	BI	C-Pine Grass Savanna	.00-.23	0.85	3	L
SIG (Low Elevation) 422002,422102,422711,422712	BI	C-Pine Grass Savanna	.05-.22	0.21	34.7	M
SIG (Low Elevation) 422002,422102,422711,422712	BI	F-Intermediate Brush	.25-.52	0.48	28.8	F
SIG (Low Elevation) 422002,422102,422711,422712	BI	F-Intermediate Brush	.01-.20	0.82	5.5	L
SIG (Low Elevation) 422002,422102,422711,422712	BI	F-Intermediate Brush	.05-.26	0.36	41.9	M
SIG (Low Elevation) 422002,422102,422711,422712	BI	H-Short Needle Pine (normal dead)	.20-.56	0.45	28.4	F
SIG (Low Elevation) 422002,422102,422711,422712	BI	H-Short Needle Pine (normal dead)	.00-.32	0.67	9.9	L
SIG (Low Elevation) 422002,422102,422711,422712	BI	H-Short Needle Pine (normal dead)	.04-.28	0.28	39.9	M
SIG (Low Elevation) 422002,422102,422711,422712	BI	Q-Alaskan Black Spruce	.19-.54	0.54	23.8	F
SIG (Low Elevation) 422002,422102,422711,422712	BI	Q-Alaskan Black Spruce	.00-.24	0.88	2.8	L
SIG (Low Elevation) 422002,422102,422711,422712	BI	Q-Alaskan Black Spruce	.03-.28	0.39	37.2	M
SIG (Low Elevation) 422002,422102,422711,422712	BI	T-Sagebrush w/Grass	.23-.55	0.43	29.8	F
SIG (Low Elevation) 422002,422102,422711,422712	BI	T-Sagebrush w/Grass	.00-.24	0.81	4.1	L
SIG (Low Elevation) 422002,422102,422711,422712	BI	T-Sagebrush w/Grass	.05-.27	0.33	37.7	M

High Elevation Statistical Analysis Based on Burning Index

Station Name/Number	Component/ Index	NFDRS Fuel Model	Prob Range	R^2	Chi^2	F=Fire Day L=Large Fire Day M=Multi-Fire Day
SIG (High Elevation) 421602, 421702, 053808,422710	BI	G-Short Needle Pine	.10-.35	0.4	41.2	F
SIG (High Elevation) 421602, 421702, 053808,422710	BI	G-Short Needle Pine	.00-.09	0.61	7.1	L
SIG (High Elevation) 421602, 421702, 053808,422710	BI	G-Short Needle Pine	.00-.07	0.14	39.5	M
SIG (High Elevation) 421602, 421702, 053808,422710	BI	A-Western Annual Grasses	.17-.24	0.03	71.7	F
SIG (High Elevation) 421602, 421702, 053808,422710	BI	A-Western Annual Grasses	.00-.07	0.42	15	L
SIG (High Elevation) 421602, 421702, 053808,422710	BI	A-Western Annual Grasses	.03-.03	0	44.4	M
SIG (High Elevation) 421602, 421702, 053808,422710	BI	C-Pine Grass Savanna	.14-.32	0.16	50.1	F
SIG (High Elevation) 421602, 421702, 053808,422710	BI	C-Pine Grass Savanna	.00-.15	0.55	8.1	L
SIG (High Elevation) 421602, 421702, 053808,422710	BI	C-Pine Grass Savanna	.02-.05	0.04	42.5	M
SIG (High Elevation) 421602, 421702, 053808,422710	BI	F-Intermediate Brush	.17-.24	0.08	37.2	F
SIG (High Elevation) 421602, 421702, 053808,422710	BI	F-Intermediate Brush	.00-.07	0.44	16.9	L
SIG (High Elevation) 421602, 421702, 053808,422710	BI	F-Intermediate Brush	.03-.03	0	27.7	M
SIG (High Elevation) 421602, 421702, 053808,422710	BI	H-Short Needle Pine (normal dead)	.11-.34	0.33	48	F
SIG (High Elevation) 421602, 421702, 053808,422710	BI	H-Short Needle Pine (normal dead)	.00-.10	0.52	12.4	L
SIG (High Elevation) 421602, 421702, 053808,422710	BI	H-Short Needle Pine (normal dead)	.01-.07	0.14	35.8	M
SIG (High Elevation) 421602, 421702, 053808,422710	BI	Q-Alaskan Black Spruce	.12-.35	0.31	38.2	F
SIG (High Elevation) 421602, 421702, 053808,422710	BI	Q-Alaskan Black Spruce	.00-.11	0.46	12.5	L
SIG (High Elevation) 421602, 421702, 053808,422710	BI	Q-Alaskan Black Spruce	.01-.08	0.14	38.8	M
SIG (High Elevation) 421602, 421702, 053808,422710	BI	T-Sagebrush w/Grass	.16-.31	0.1	62.6	F
SIG (High Elevation) 421602, 421702, 053808,422710	BI	T-Sagebrush w/Grass	.00-.16	0.5	11.1	L
SIG (High Elevation) 421602, 421702, 053808,422710	BI	T-Sagebrush w/Grass	.02-.05	0.02	42.4	M

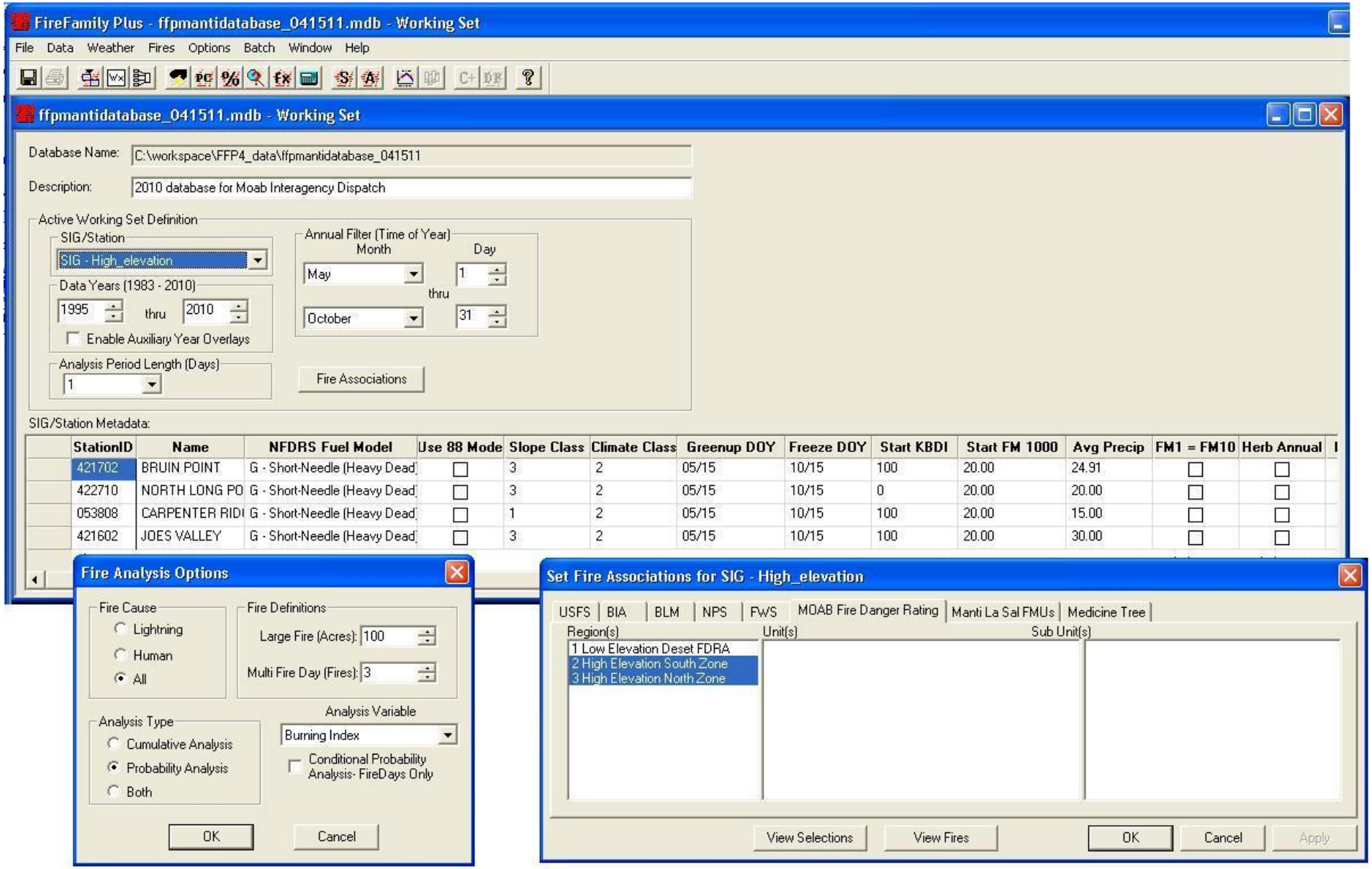
Low Elevation Statistical Analysis Based on Ignition Component

Station Name/Number	Component/ Index	NFDRS Fuel Model	Prob Range	R^2	Chi^2	F=Fire Day L=Large Fire Day M=Multi-Fire Day
SIG (Low Elevation) 422002,422102,422711,422712	IC	G-Short Needle Pine	.27-.39	0.2	29.5	F
SIG (Low Elevation) 422002,422102,422711,422712	IC	G-Short Needle Pine	.00-.10	0.68	11.4	L
SIG (Low Elevation) 422002,422102,422711,422712	IC	G-Short Needle Pine	.08-.12	0.05	35.6	M
SIG (Low Elevation) 422002,422102,422711,422712	IC	A-Western Annual Grasses	.28-.38	0.12	33.5	F
SIG (Low Elevation) 422002,422102,422711,422712	IC	A-Western Annual Grasses	.01-.10	0.58	14.4	L
SIG (Low Elevation) 422002,422102,422711,422712	IC	A-Western Annual Grasses	.08-.11	0.01	35.6	M
SIG (Low Elevation) 422002,422102,422711,422712	IC	C-Pine Grass Savanna	.25-.40	0.24	29.5	F
SIG (Low Elevation) 422002,422102,422711,422712	IC	C-Pine Grass Savanna	.00-.09	0.81	5	L
SIG (Low Elevation) 422002,422102,422711,422712	IC	C-Pine Grass Savanna	.07-.13	0.1	30	M
SIG (Low Elevation) 422002,422102,422711,422712	IC	F-Intermediate Brush	.23-.39	0.51	22.6	F
SIG (Low Elevation) 422002,422102,422711,422712	IC	F-Intermediate Brush	.00-.05	0.68	10.4	L
SIG (Low Elevation) 422002,422102,422711,422712	IC	F-Intermediate Brush	.05-.13	0.33	33.1	M
SIG (Low Elevation) 422002,422102,422711,422712	IC	H-Short Needle Pine (normal dead)	.26-.39	0.19	34.7	F
SIG (Low Elevation) 422002,422102,422711,422712	IC	H-Short Needle Pine (normal dead)	.00-.09	0.75	7.4	L
SIG (Low Elevation) 422002,422102,422711,422712	IC	H-Short Needle Pine (normal dead)	.07-.12	0.05	37.7	M
SIG (Low Elevation) 422002,422102,422711,422712	IC	Q-Alaskan Black Spruce	.24-.41	0.37	26.4	F
SIG (Low Elevation) 422002,422102,422711,422712	IC	Q-Alaskan Black Spruce	.00-.10	0.8	6.2	L
SIG (Low Elevation) 422002,422102,422711,422712	IC	Q-Alaskan Black Spruce	.06-.14	0.2	26.1	M
SIG (Low Elevation) 422002,422102,422711,422712	IC	T-Sagebrush w/Grass	.25-.42	0.28	33.5	F
SIG (Low Elevation) 422002,422102,422711,422712	IC	T-Sagebrush w/Grass	.00-.11	0.69	8.6	L
SIG (Low Elevation) 422002,422102,422711,422712	IC	T-Sagebrush w/Grass	.07-.14	0.14	34.4	M

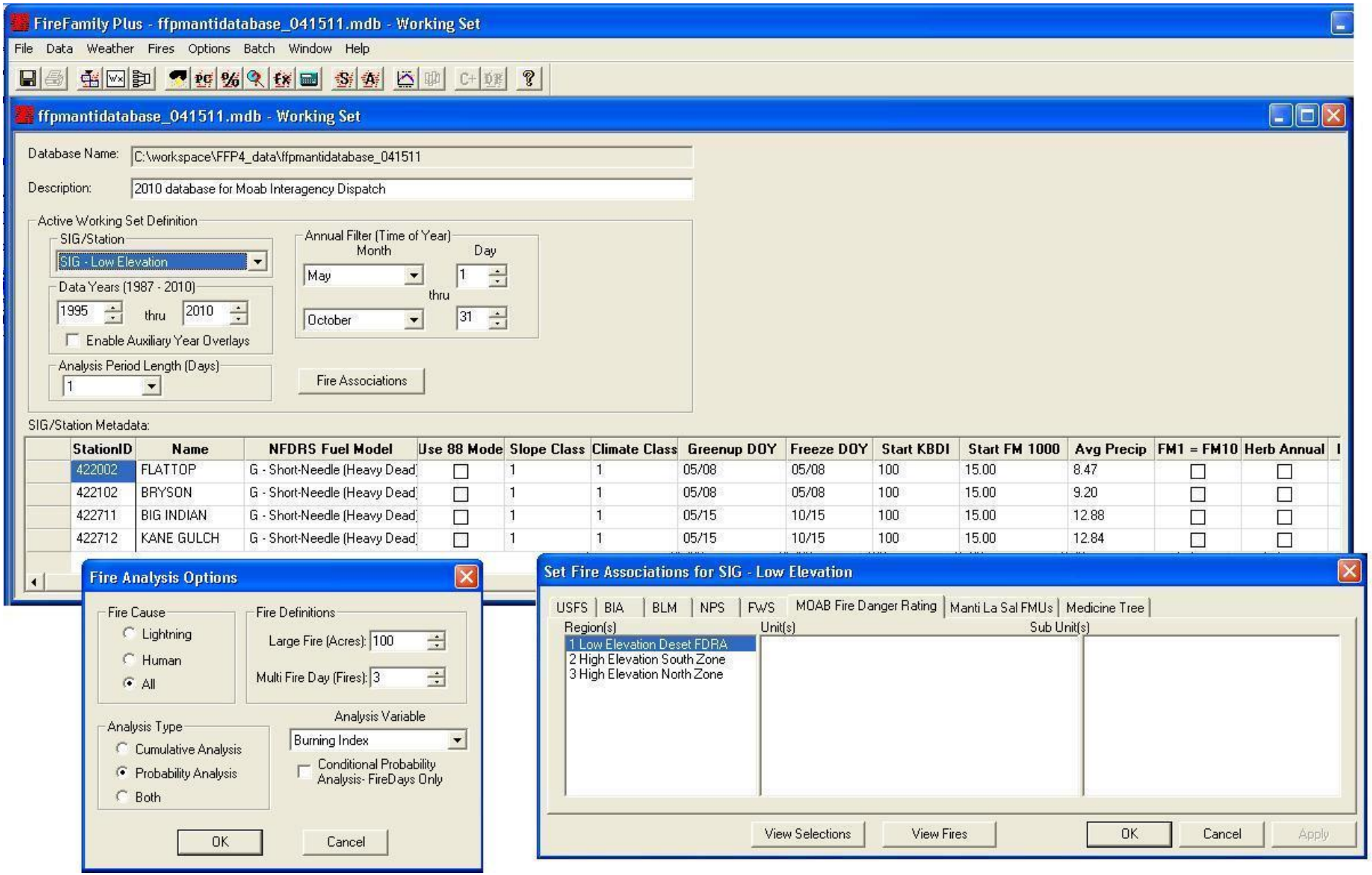
High Elevation Statistical Analysis Based on Ignition Component

Station Name/Number	Component / Index	NFDRS Fuel Model	Prob Range	R^2	Chi^2	F=Fire Day L=Large Fire Day M=Multi-Fire Day
SIG (High Elevation) 421602, 421702, 053808,422710	IC	G-Short Needle Pine	.18-.23	0.04	37.4	F
SIG (High Elevation) 421602, 421702, 053808,422710	IC	G-Short Needle Pine	.00-.09	0.47	13.7	L
SIG (High Elevation) 421602, 421702, 053808,422710	IC	G-Short Needle Pine	.02-.03	0.02	33.9	M
SIG (High Elevation) 421602, 421702, 053808,422710	IC	A-Western Annual Grasses	..18-.22	0.01	48.3	F
SIG (High Elevation) 421602, 421702, 053808,422710	IC	A-Western Annual Grasses	.00-.12	0.46	11	L
SIG (High Elevation) 421602, 421702, 053808,422710	IC	A-Western Annual Grasses	.01-.04	0.03	37.5	M
SIG (High Elevation) 421602, 421702, 053808,422710	IC	C-Pine Grass Savanna	.17-.24	0.06	50.6	F
SIG (High Elevation) 421602, 421702, 053808,422710	IC	C-Pine Grass Savanna	.00-.09	0.47	13	L
SIG (High Elevation) 421602, 421702, 053808,422710	IC	C-Pine Grass Savanna	.02-.03	0.01	42.7	M
SIG (High Elevation) 421602, 421702, 053808,422710	IC	F-Intermediate Brush	.18-.22	0.05	35.4	F
SIG (High Elevation) 421602, 421702, 053808,422710	IC	F-Intermediate Brush	.00-.04	0.38	18.5	L
SIG (High Elevation) 421602, 421702, 053808,422710	IC	F-Intermediate Brush	.03-.03	0	19.2	M
SIG (High Elevation) 421602, 421702, 053808,422710	IC	H-Short Needle Pine (normal dead)	.17-.24	0.04	39.4	F
SIG (High Elevation) 421602, 421702, 053808,422710	IC	H-Short Needle Pine (normal dead)	.00-.09	0.4	16.2	L
SIG (High Elevation) 421602, 421702, 053808,422710	IC	H-Short Needle Pine (normal dead)	.02-.03	0.01	39	M
SIG (High Elevation) 421602, 421702, 053808,422710	IC	Q-Alaskan Black Spruce	.17-.25	0.06	51.6	F
SIG (High Elevation) 421602, 421702, 053808,422710	IC	Q-Alaskan Black Spruce	.00-.09	0.39	18.3	L
SIG (High Elevation) 421602, 421702, 053808,422710	IC	Q-Alaskan Black Spruce	.02-.03	0	32.5	M
SIG (High Elevation) 421602, 421702, 053808,422710	IC	T-Sagebrush w/Grass	.17-.25	0.05	45.7	F
SIG (High Elevation) 421602, 421702, 053808,422710	IC	T-Sagebrush w/Grass	.00-.10	0.5	12.1	L
SIG (High Elevation) 421602, 421702, 053808,422710	IC	T-Sagebrush w/Grass	.02-.03	0	44.2	M

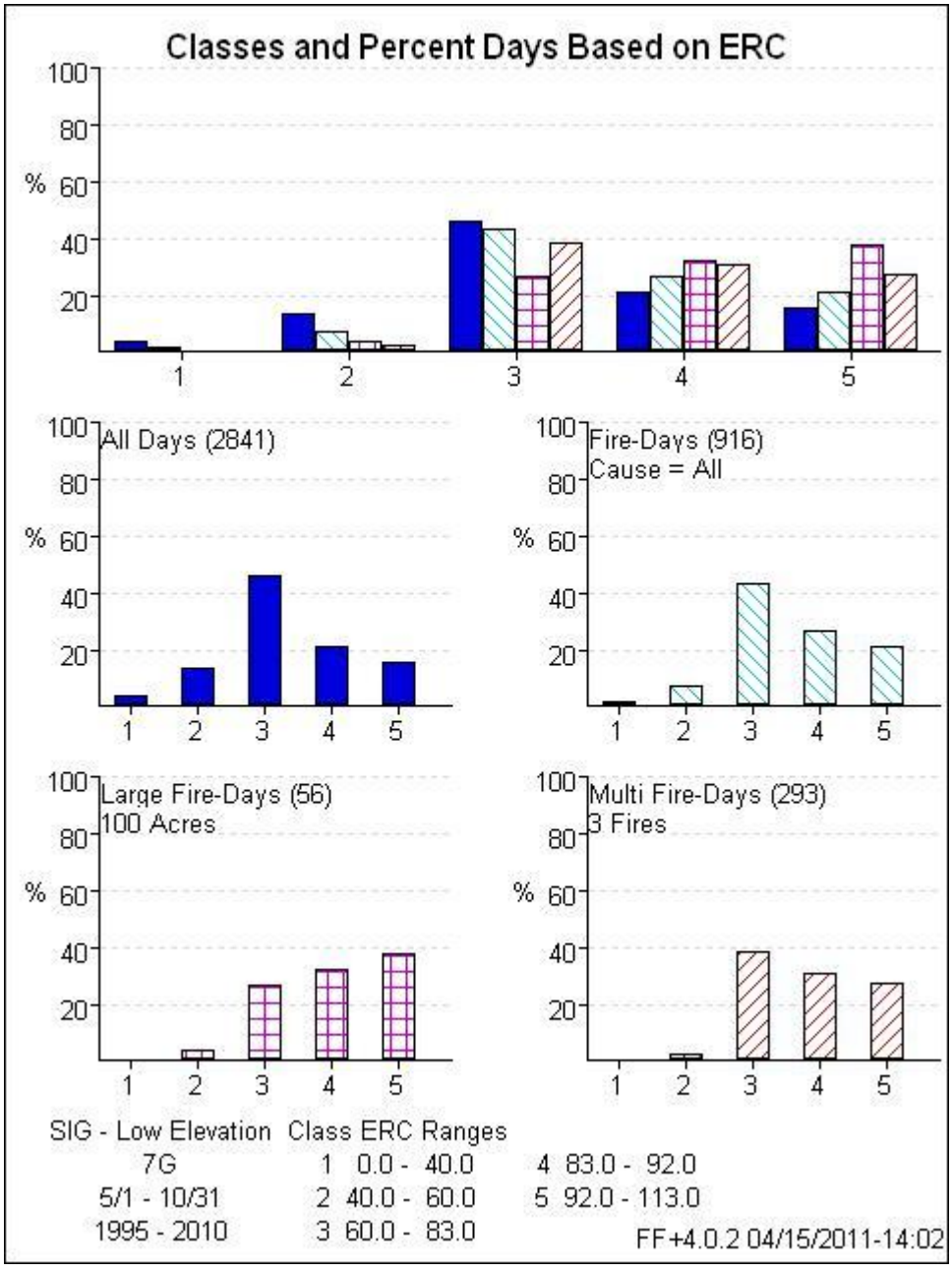
FFPlus Working Sets
(High Elevation Mountains FDOP)


FireFamily Plus - ffpmantidatabase_041511.mdb - Working Set
File Data Weather Fires Options Batch Window Help
ffpmantidatabase_041511.mdb - Working Set
Database Name: C:\workspace\FFP4_data\ffpmantidatabase_041511
Description: 2010 database for Moab Interagency Dispatch
Active Working Set Definition
SIG/Station
SIG - High_elevation
Data Years (1983 - 2010)
1995 thru 2010
Enable Auxiliary Year Overlays
Analysis Period Length (Days)
1
Annual Filter (Time of Year)
Month Day
May 1
thru
October 31
Fire Associations
SIG/Station Metadata:
StationID Name NFDRS Fuel Model Use 88 Mode Slope Class Climate Class Greenup DOY Freeze DOY Start KBDI Start FM 1000 Avg Precip FM1 = FM10 Herb Annual
421702 BRUIN POINT G - Short-Needle (Heavy Dead) 3 2 05/15 10/15 100 20.00 24.91
422710 NORTH LONG PO G - Short-Needle (Heavy Dead) 3 2 05/15 10/15 0 20.00 20.00
053808 CARPENTER RIDI G - Short-Needle (Heavy Dead) 1 2 05/15 10/15 100 20.00 15.00
421602 JOES VALLEY G - Short-Needle (Heavy Dead) 3 2 05/15 10/15 100 20.00 30.00
Fire Analysis Options
Fire Cause
Lightning
Human
All
Fire Definitions
Large Fire (Acres): 100
Multi Fire Day (Fires): 3
Analysis Type
Cumulative Analysis
Probability Analysis
Both
Analysis Variable
Burning Index
Conditional Probability Analysis- FireDays Only
OK
Cancel
Set Fire Associations for SIG - High_elevation
USFS BIA BLM NPS FWS MOAB Fire Danger Rating Manti La Sal FMUs Medicine Tree
Region(s)
1 Low Elevation Deset FDRA
2 High Elevation South Zone
3 High Elevation North Zone
Unit(s)
Sub Unit(s)
View Selections
View Fires
OK
Cancel
Apply

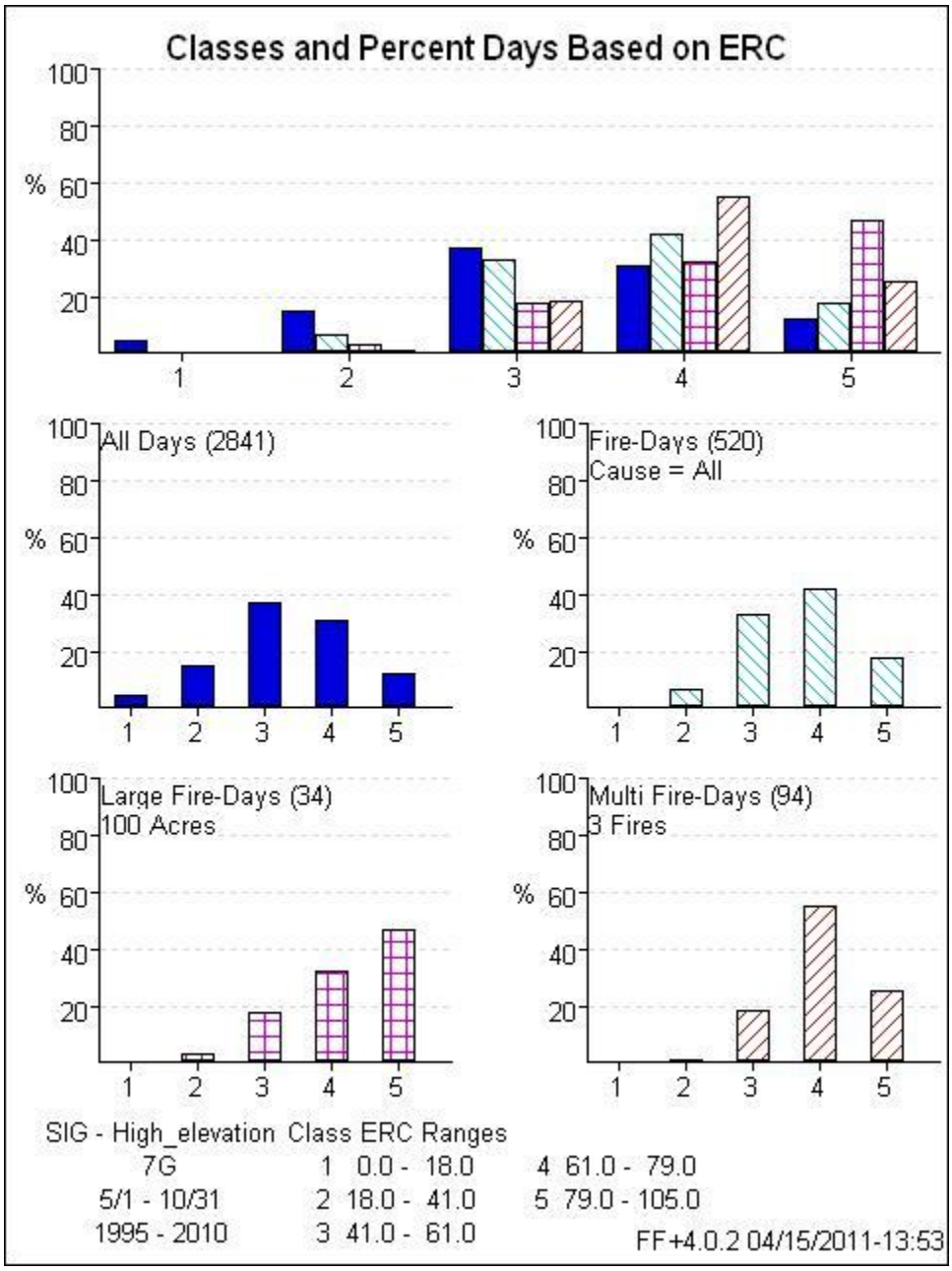
Working Set (Low Elevation Mesa Top and Desert FDOP)



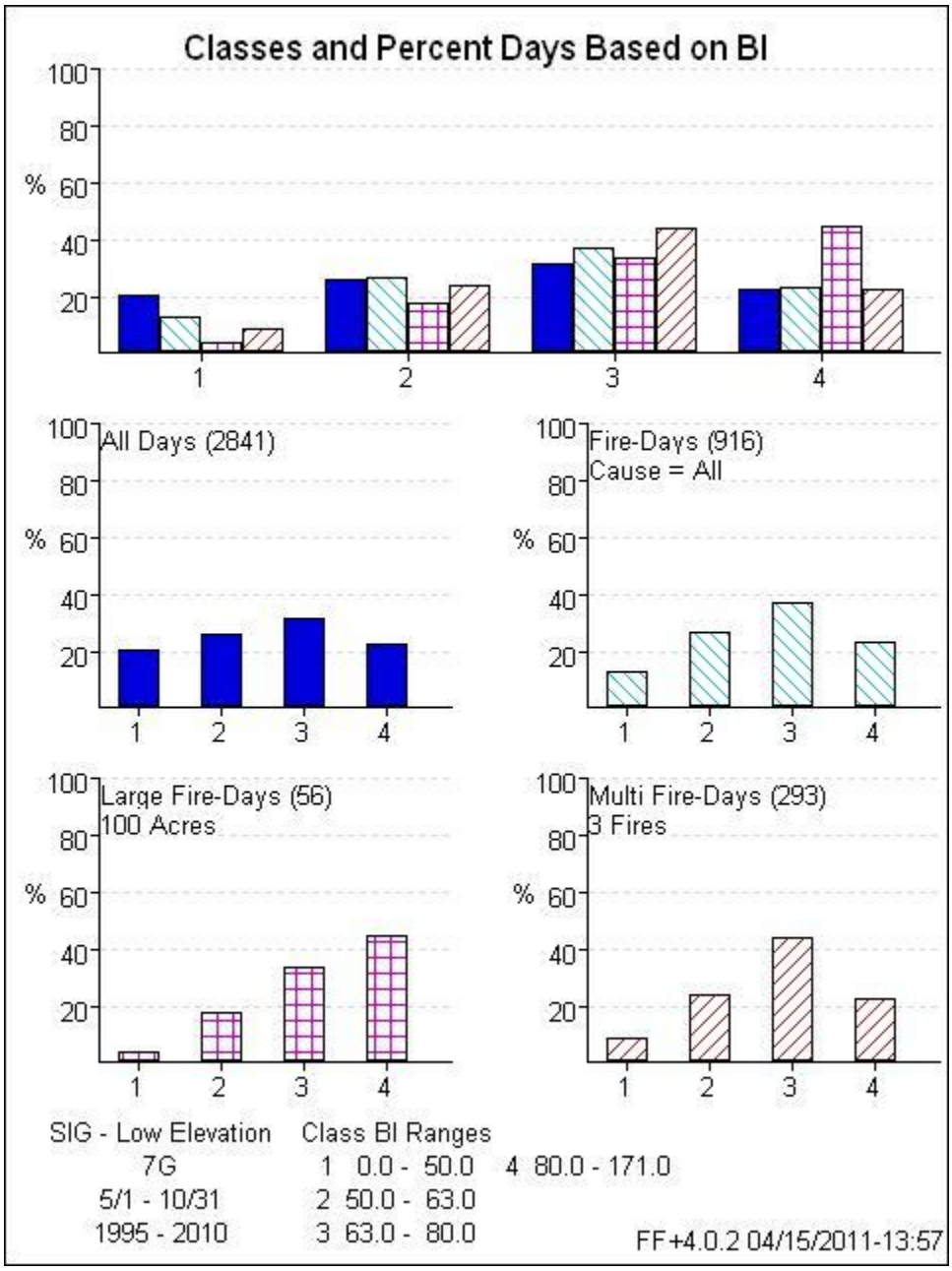
Preparedness Level Decision Points
Low Elevation Mesa Tops and Desert FDRA



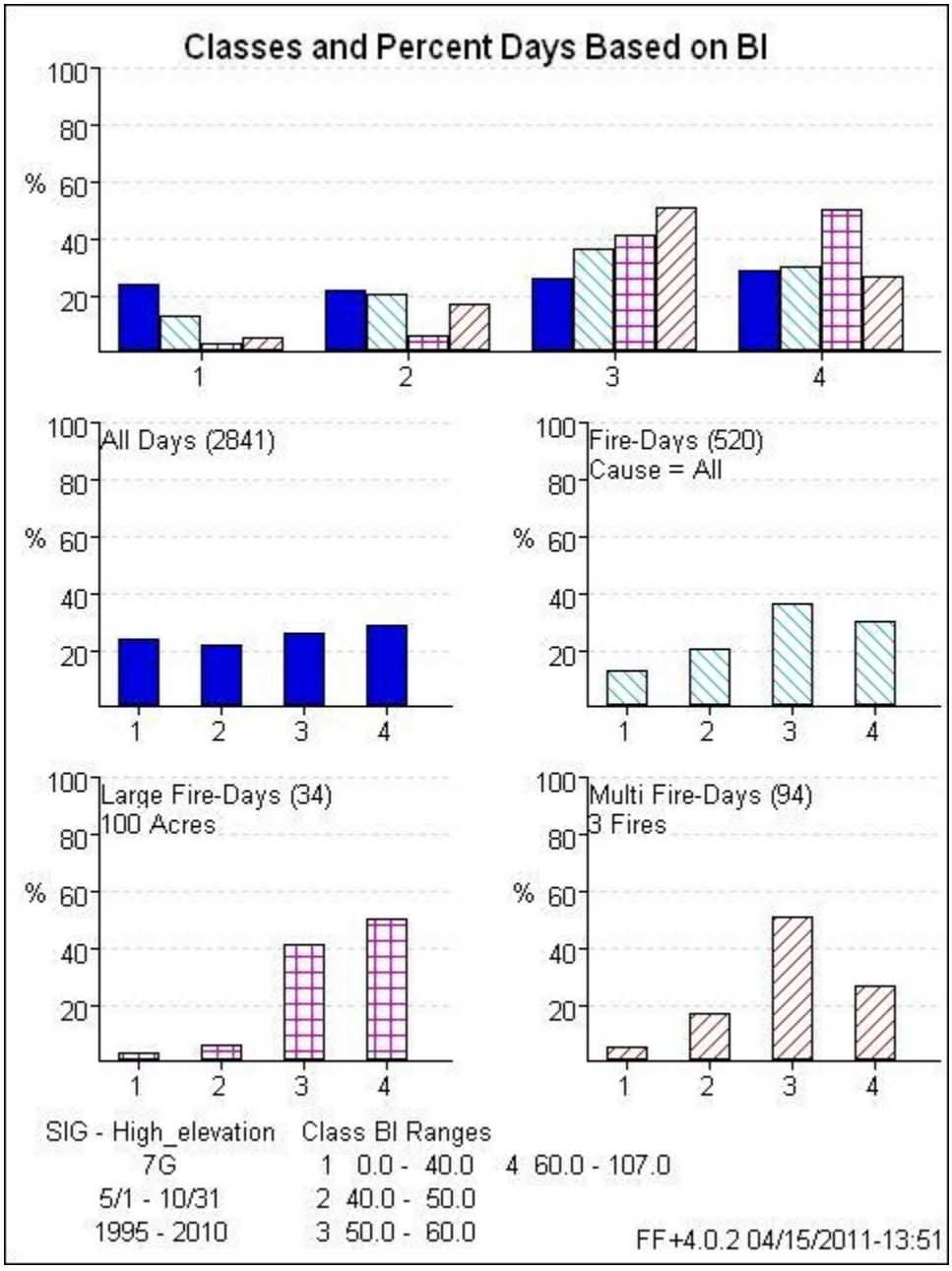
High Elevation Mountains FDRA



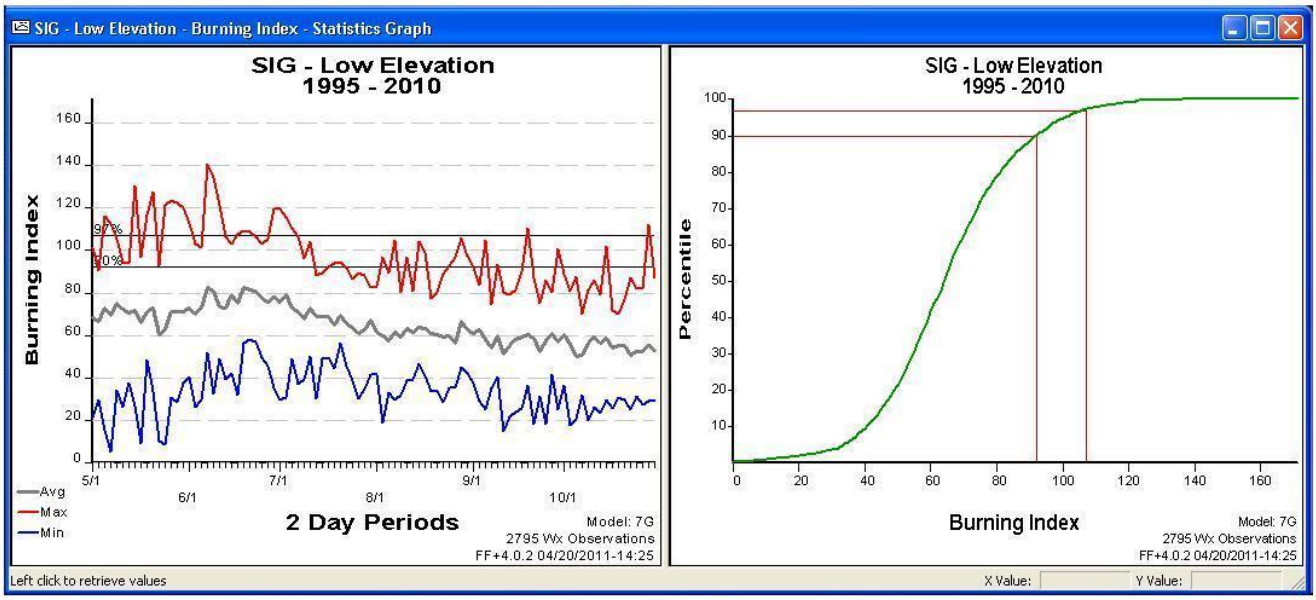
Dispatch Level Decision Points
Low Elevation Mesa Tops and Desert FDRA

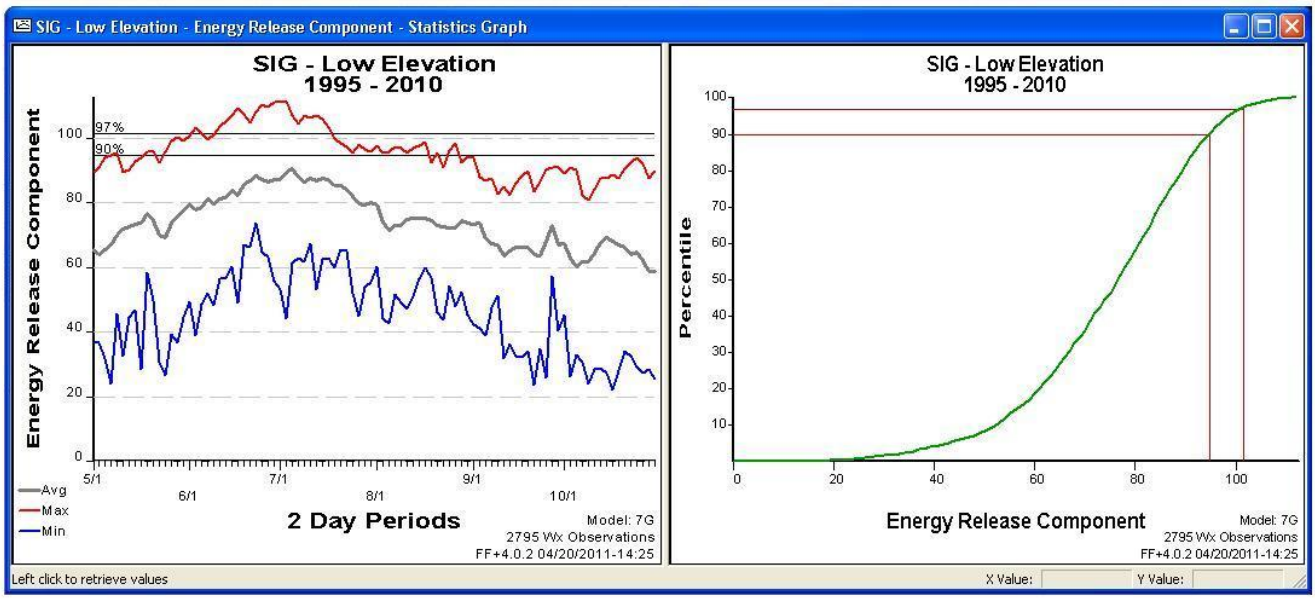


High Elevation Mountains FDRA

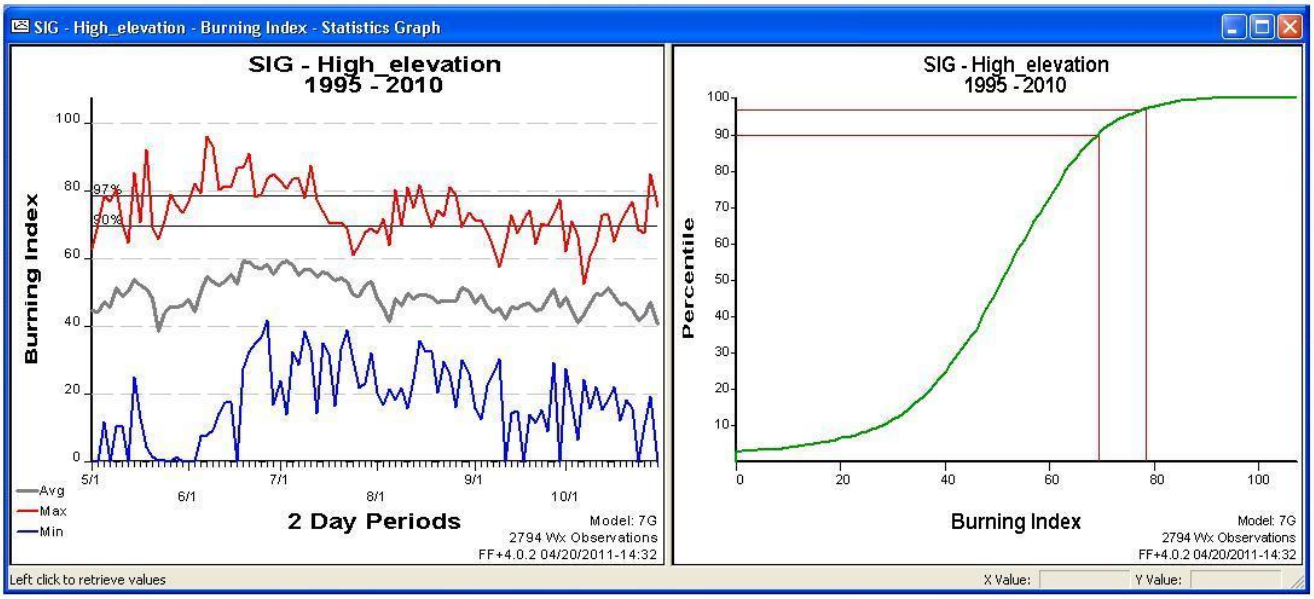


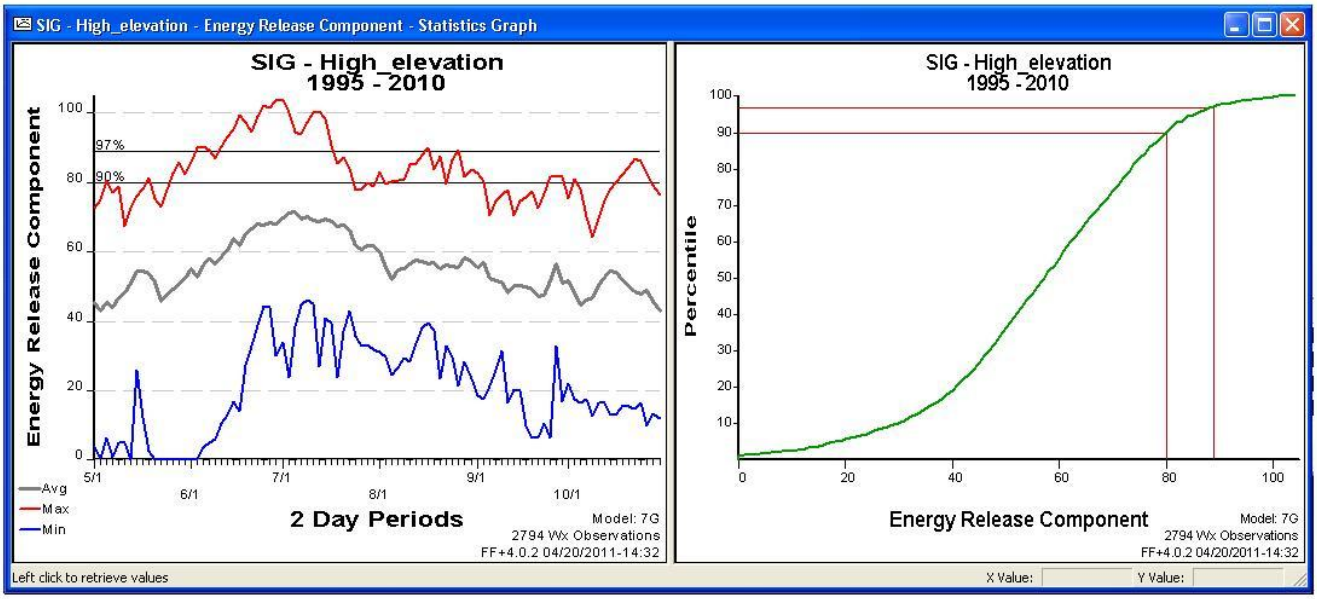
Climatological Decision Points
Low Elevation Mesa Tops and Desert FDRA





High Elevation Mountains FDRA

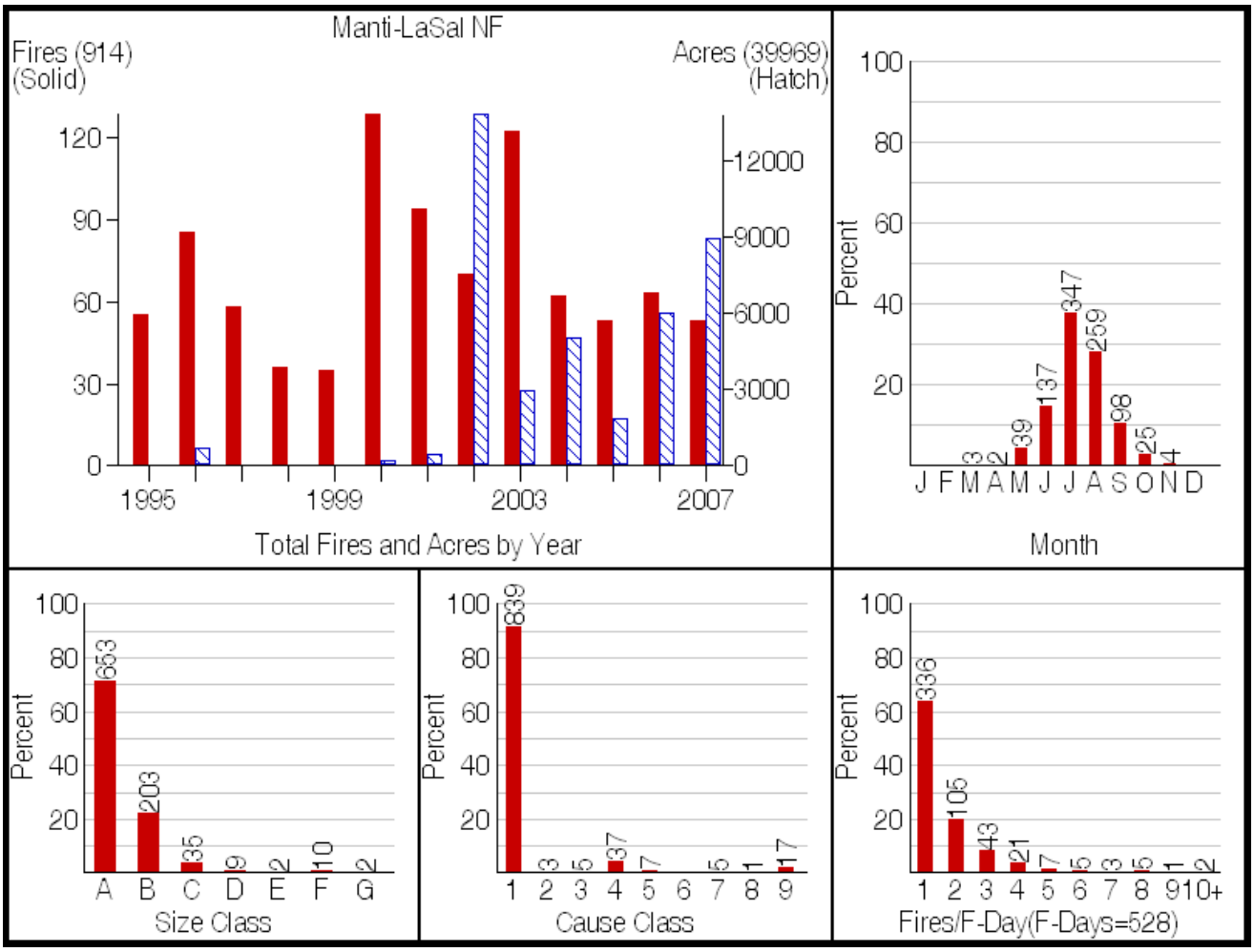




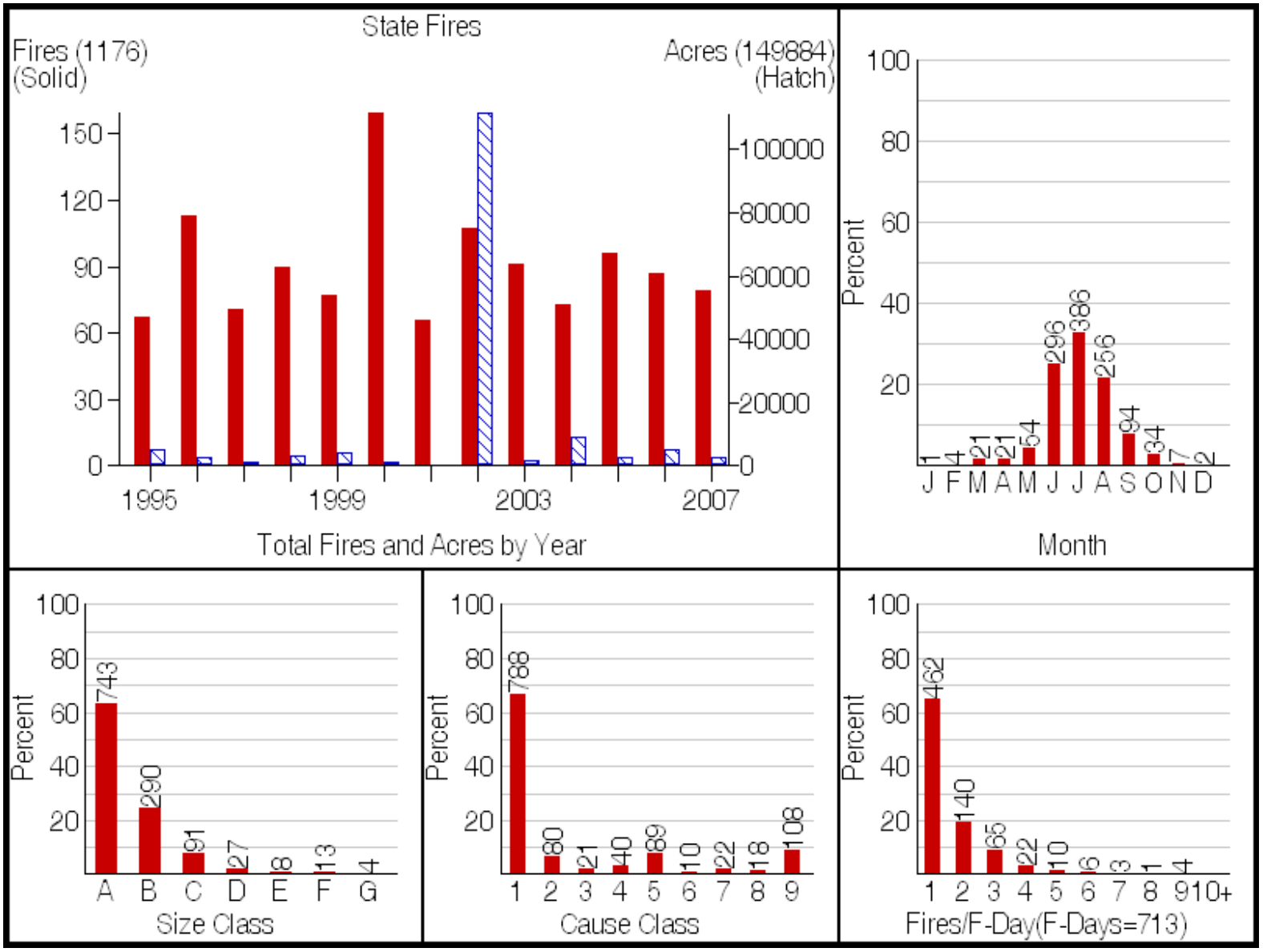
Appendix K—Fire Occurrence (by Agency)

FireFamily Plus Database (1995-2007) Moab Interagency Fire Center				
Agency	**# of Fires**	**% of Total Fires**	**Acres Burned**	**% of Total Acres**
BLM	1,414	**39.66%**	234,699	**55.20%**
State of Utah	1,176	**32.99%**	149,883	**35.25%**
Manti La Sal NF	914	**25.64%**	39969	**9.40%**
Arches NP	13	**0.36%**	11	**0.00%**
Canyonlands NP	48	**1.35%**	626	**0.15%**
TOTALS	**3,565**	**100%**	**425,188**	**100%**

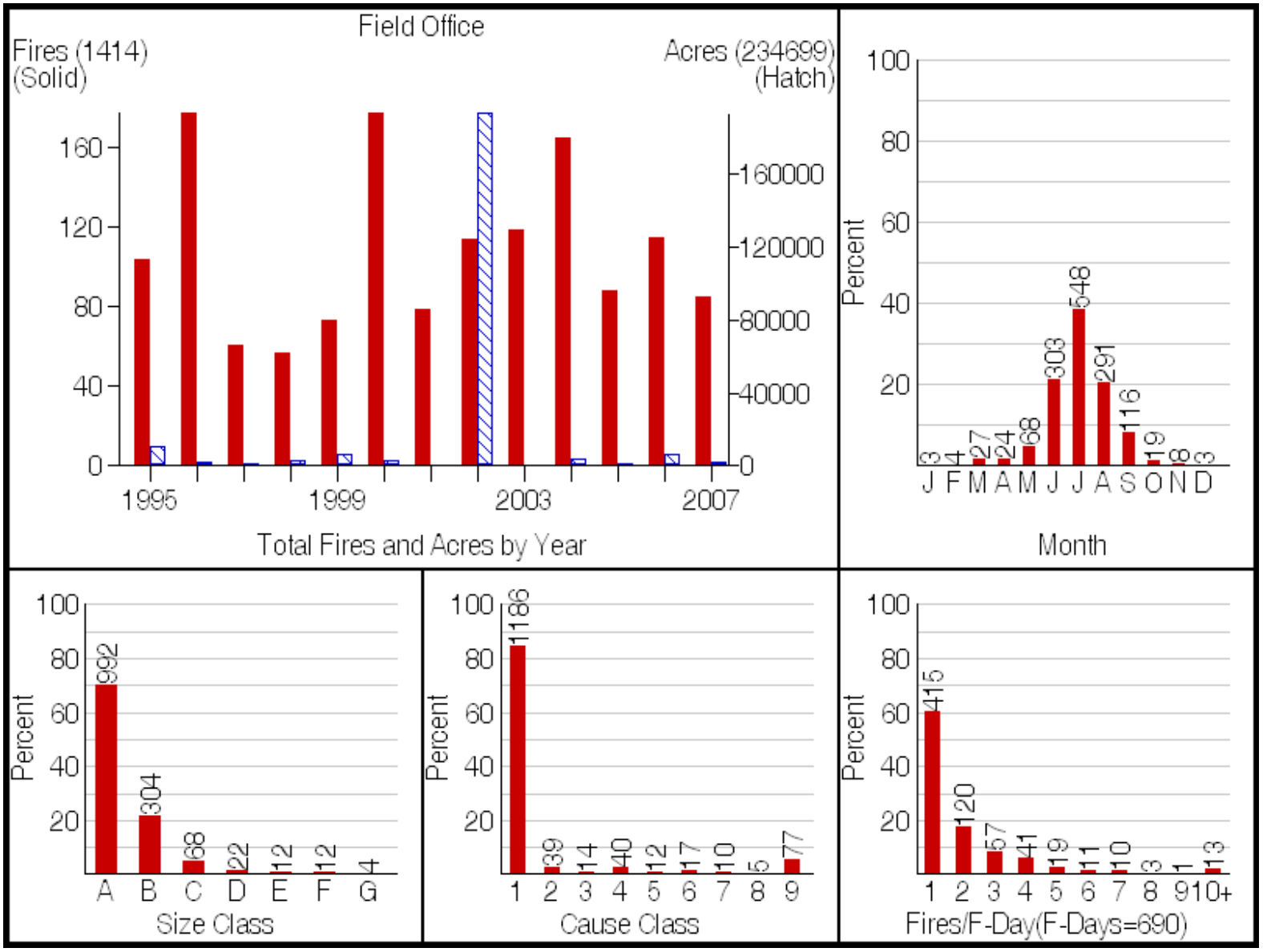
Manti La Sal National Forest



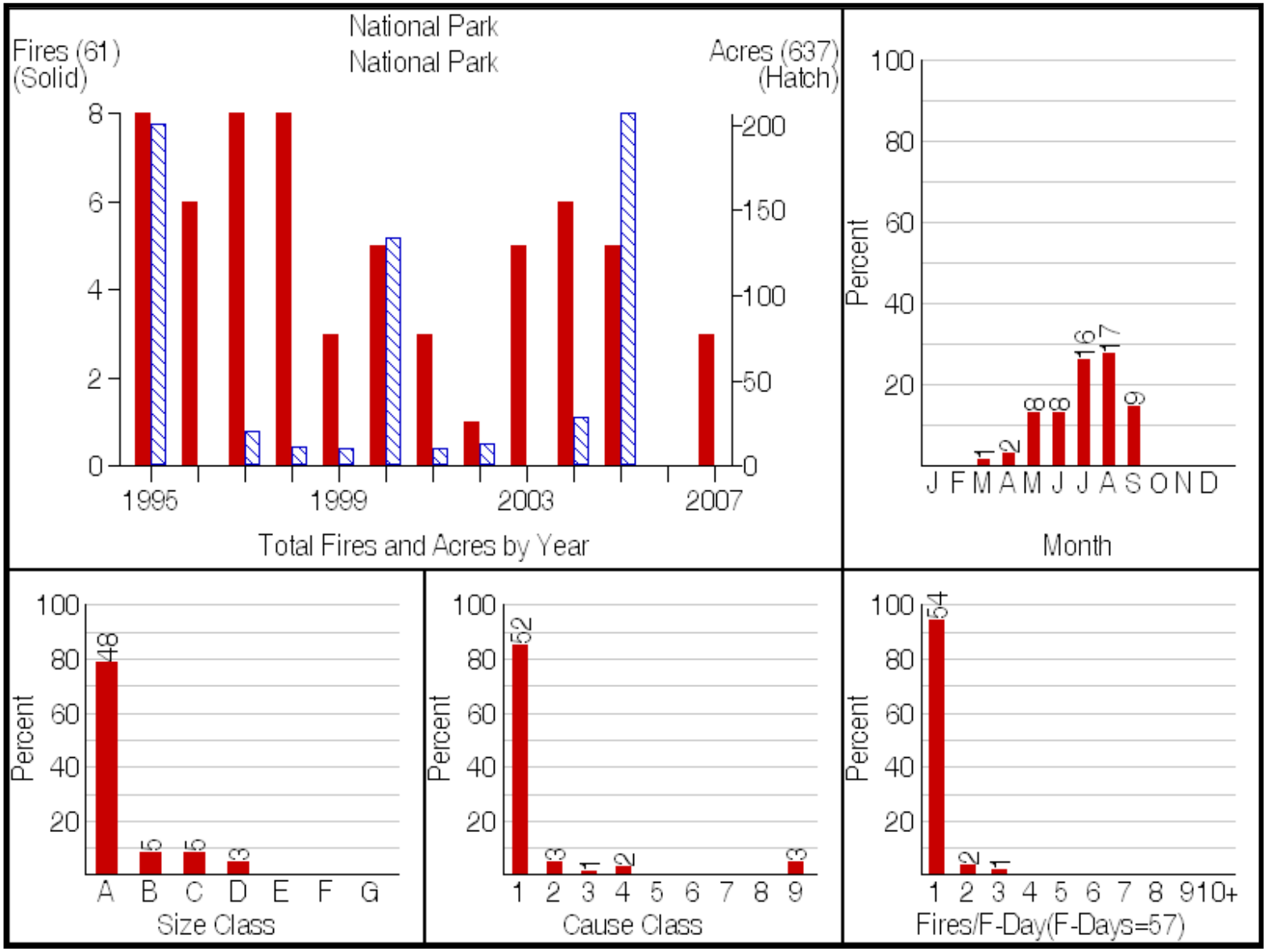
State of Utah



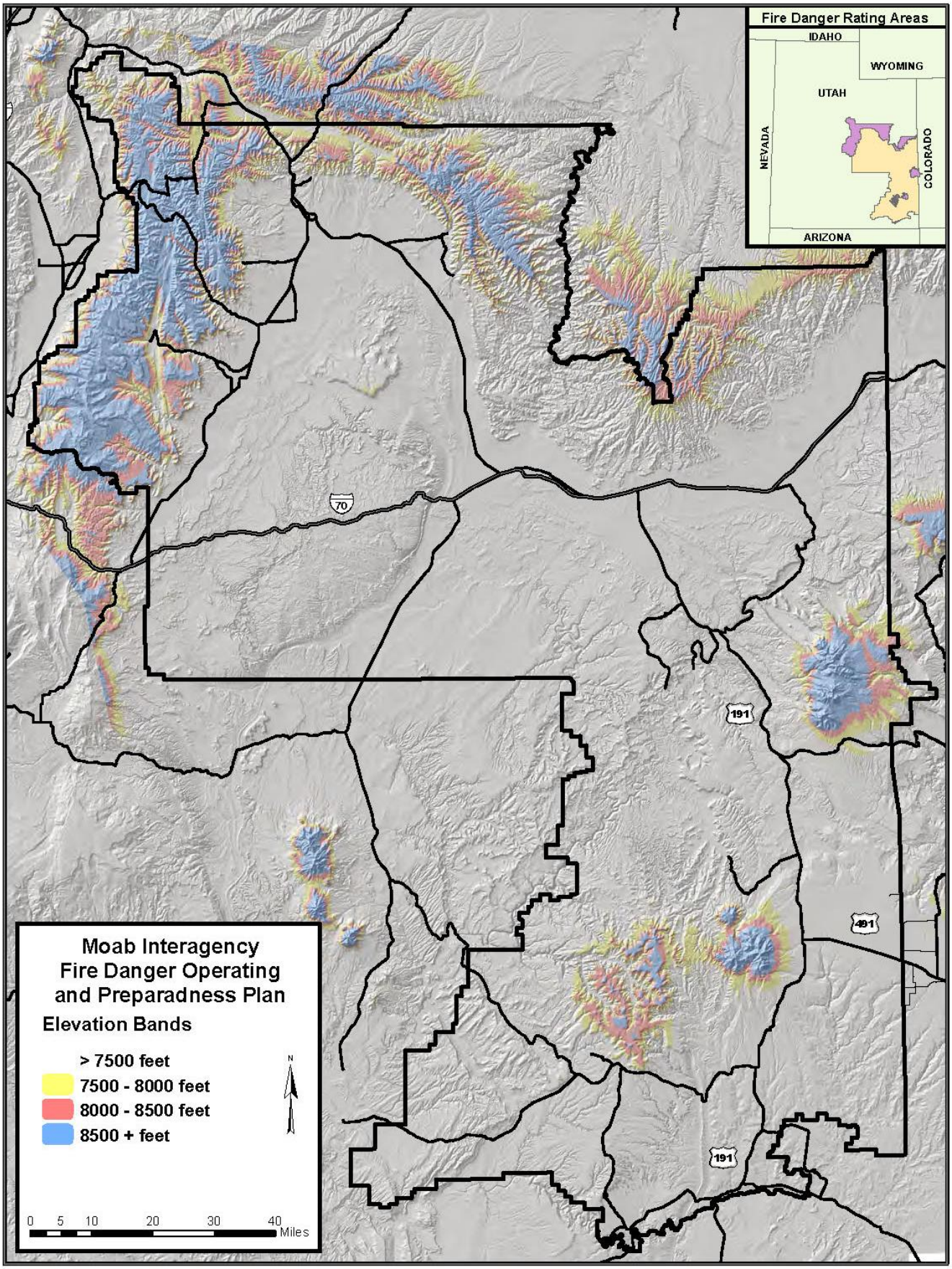
Moab BLM

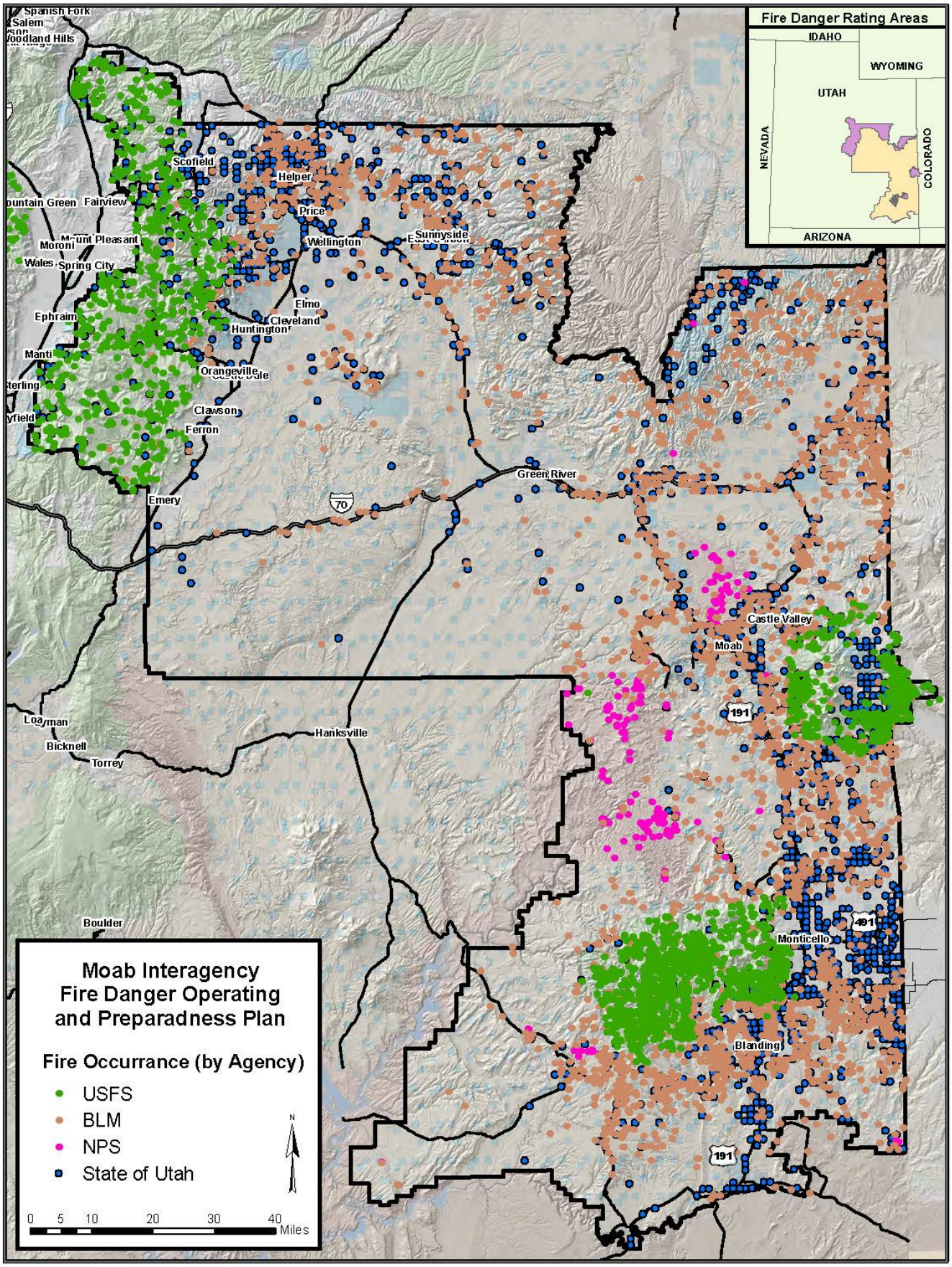

Field Office
Fires (1414)
(Solid)
Acres (234699)
(Hatch)
160
120
80
40
0
160000
120000
80000
40000
0
1995
1999
2003
2007
Total Fires and Acres by Year
Percent
100
80
60
40
20
3
4
27
24
68
303
548
291
116
19
8
3
J F M A M J J A S O N D
Month
Percent
992
304
68
22
12
12
4
A B C D E F G
Size Class
Percent
1186
39
14
40
12
7
10
5
77
1 2 3 4 5 6 7 8 9
Cause Class
Percent
415
120
57
41
19
11
10
3
1
13
1 2 3 4 5 6 7 8 9 10+
Fires/F-Day(F-Days=690)

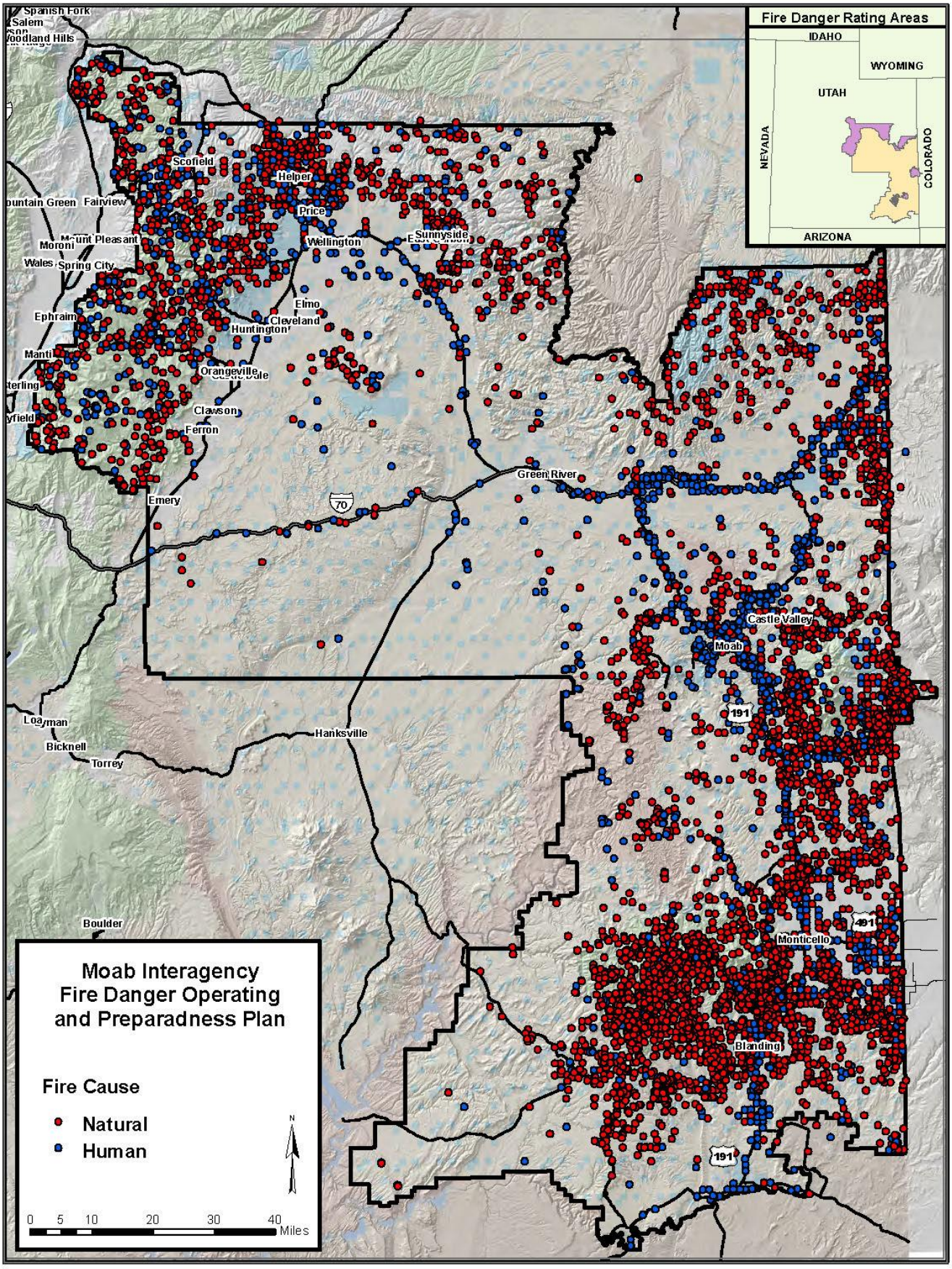
Arches and Canyonlands National Parks

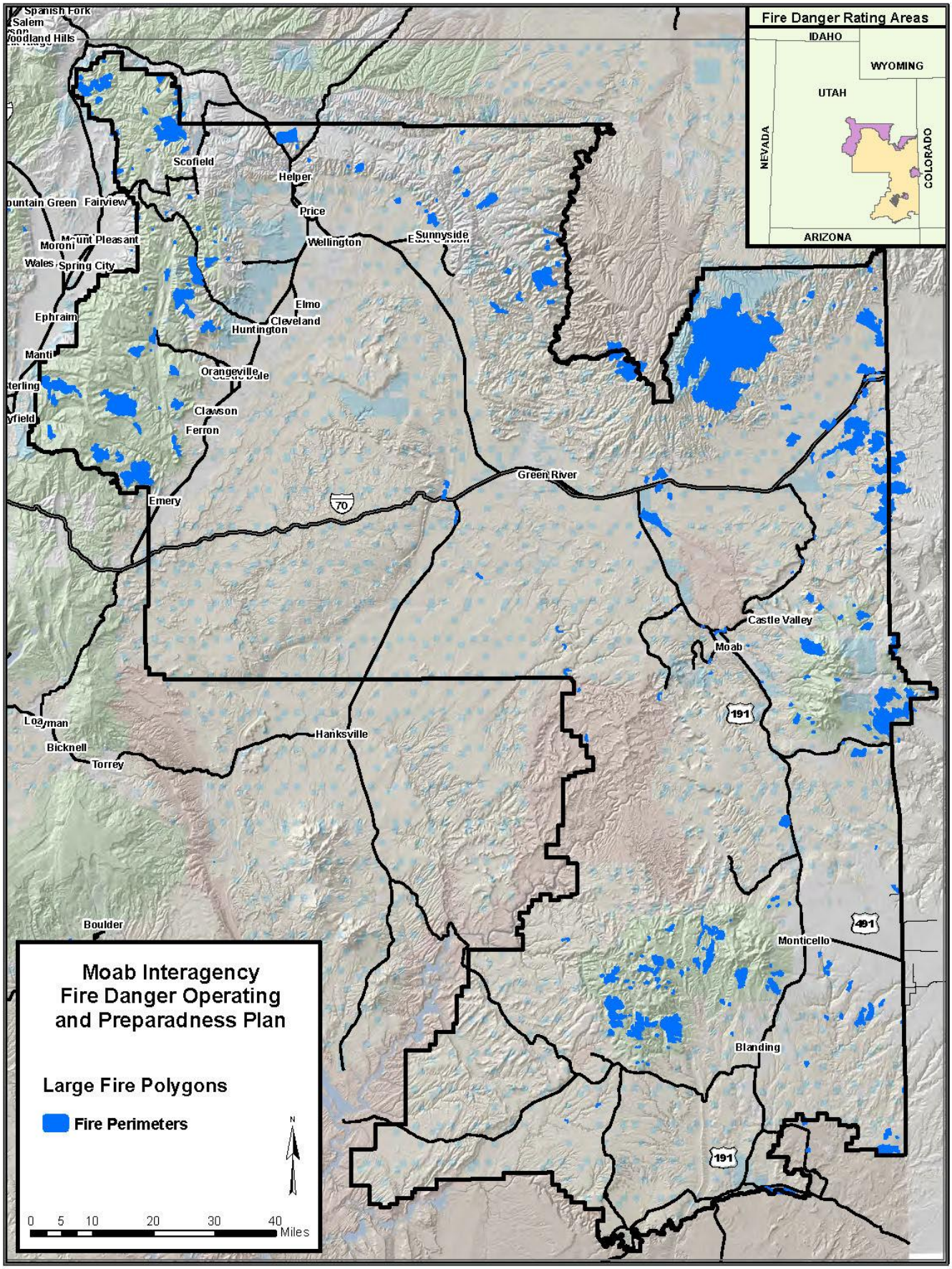


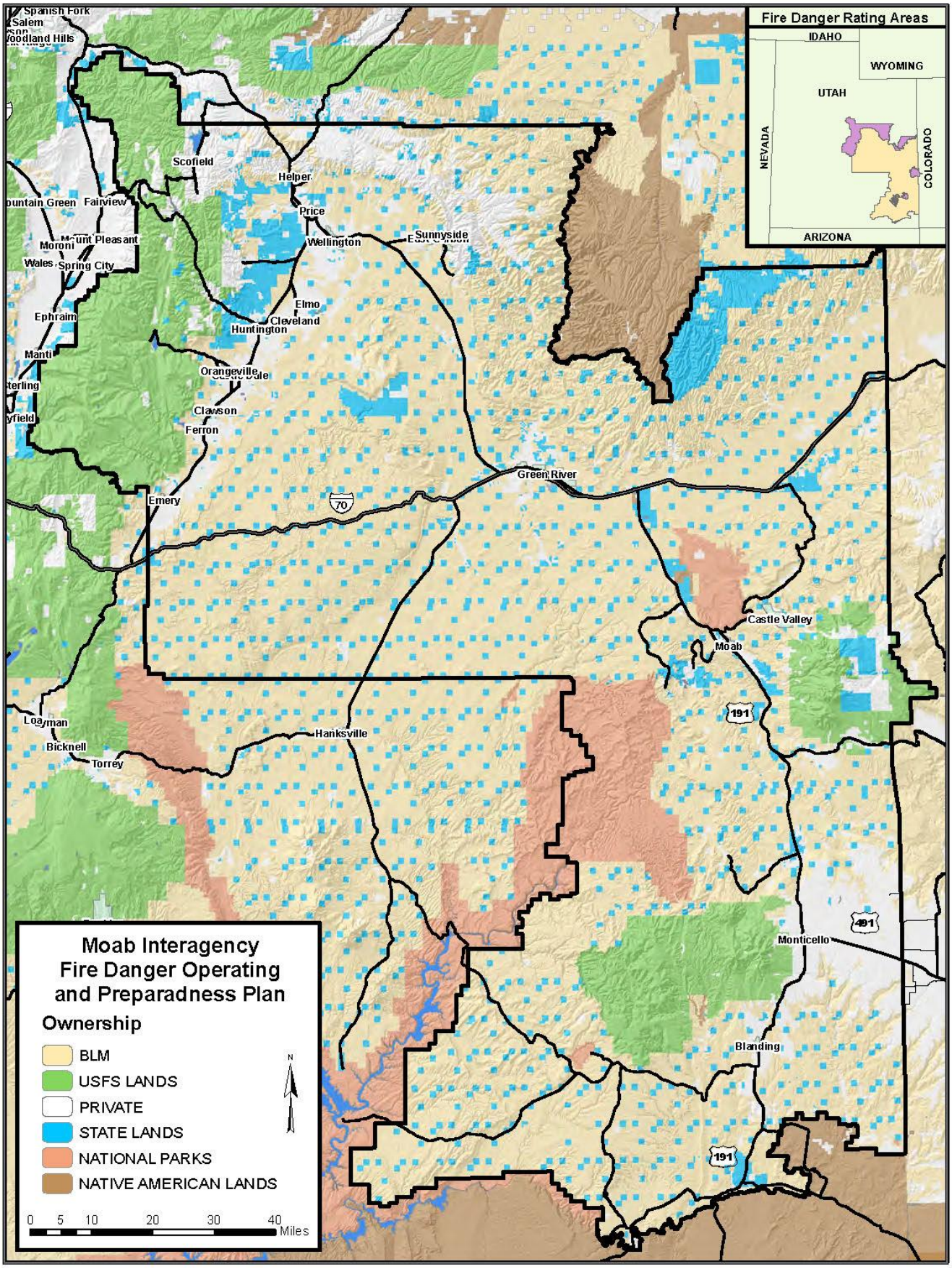
Appendix L –Maps

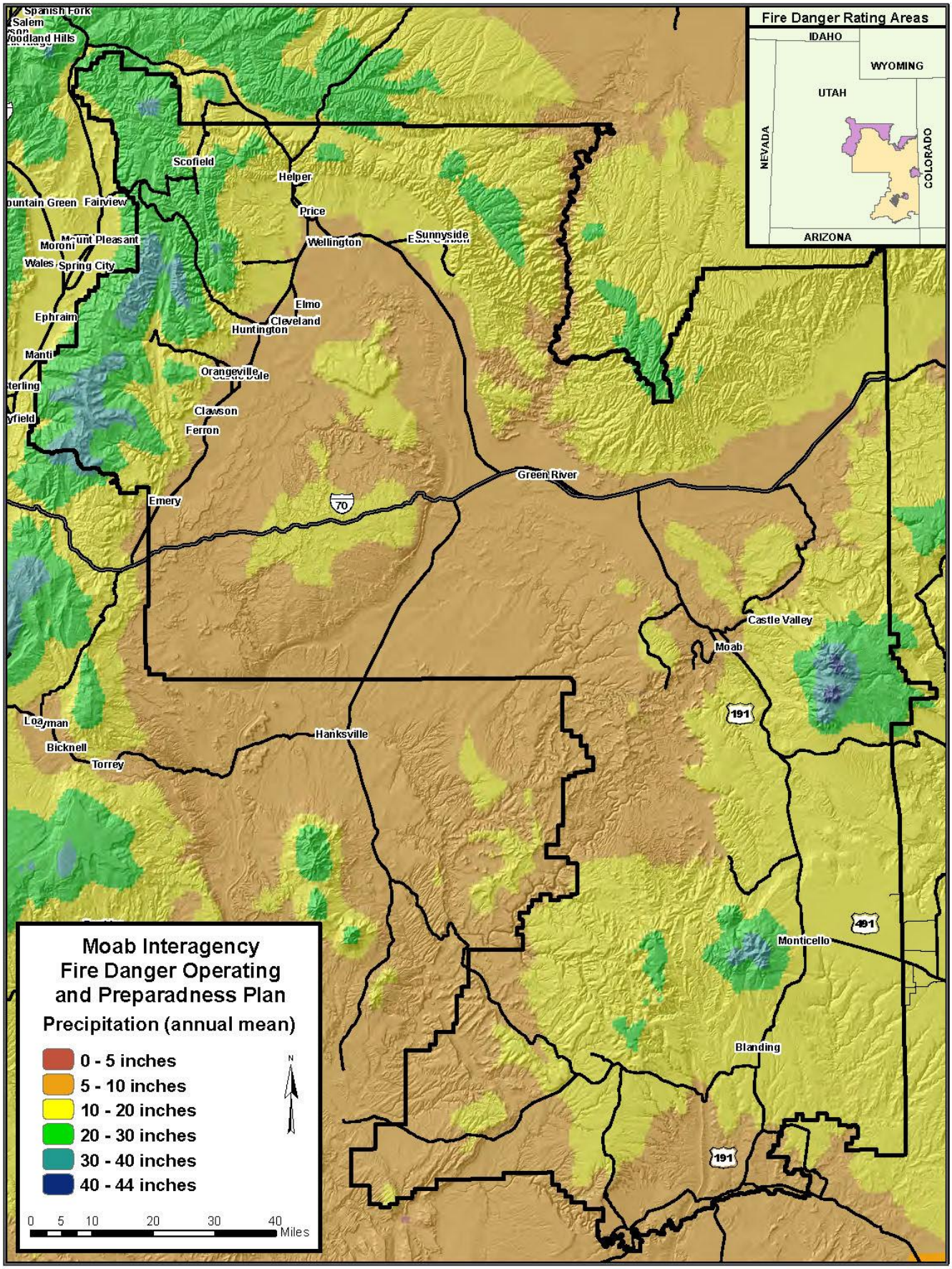


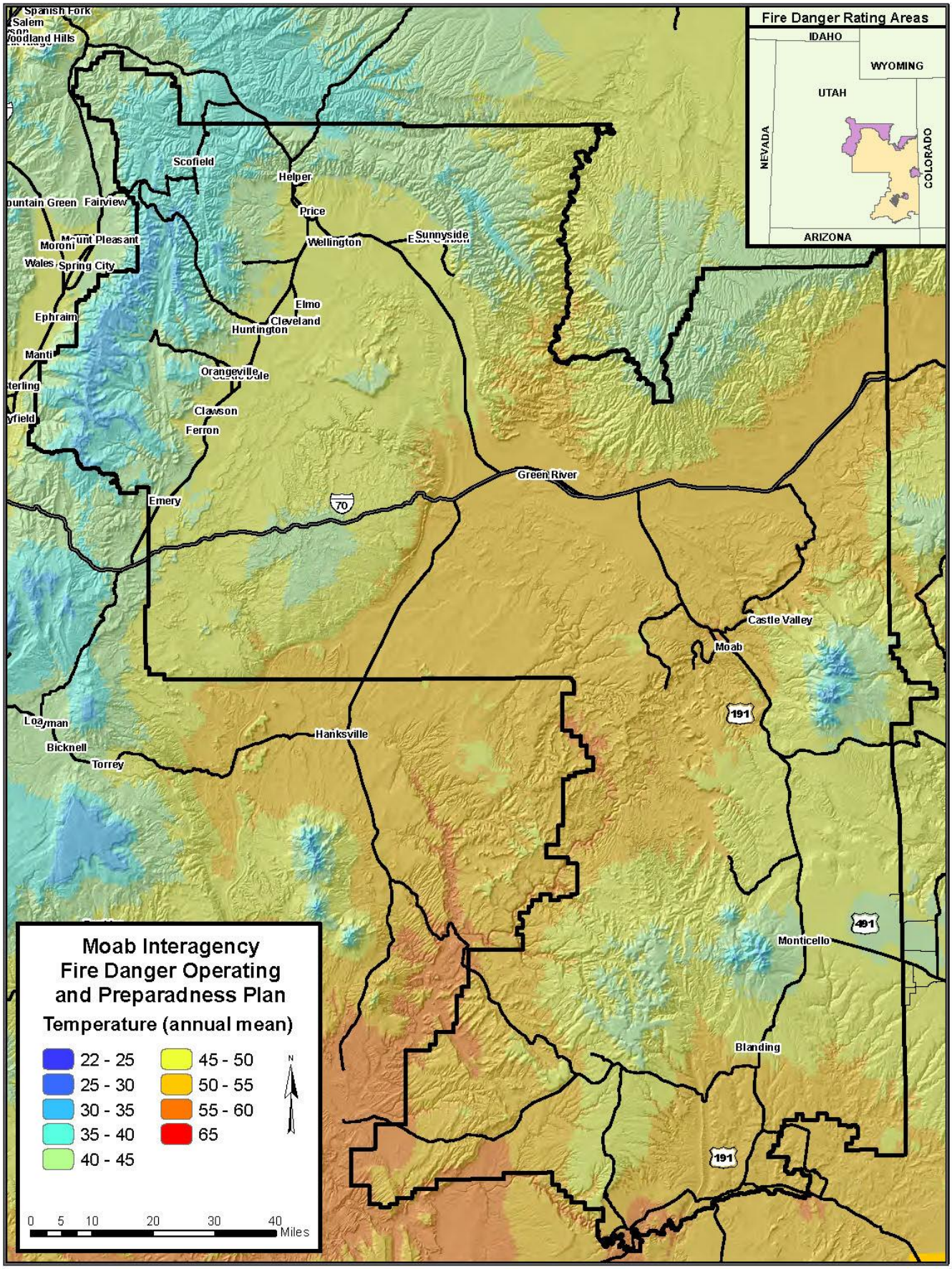

Fire Danger Rating Areas
IDAHO
WYOMING
UTAH
NEVADA
COLORADO
ARIZONA
Moab Interagency
Fire Danger Operating
and Preparadness Plan
Fire Occurrance (by Agency)
USFS
BLM
NPS
State of Utah
N
0 5 10 20 30 40
Miles
Spanish Fork
Salem
Woodland Hills
Scofield
Helper
Fairview
Price
Wellington
Sunnyside
Moroni
Mount Pleasant
Wales
Spring City
Elmo
Ephraim
Cleveland
Huntington
Manti
Orangeville
Clawson
Ferron
Emery
70
Green River
Castle Valley
Moab
191
Loa
Bicknell
Torrey
Hanksville
Boulder
Monticello
491
Blanding

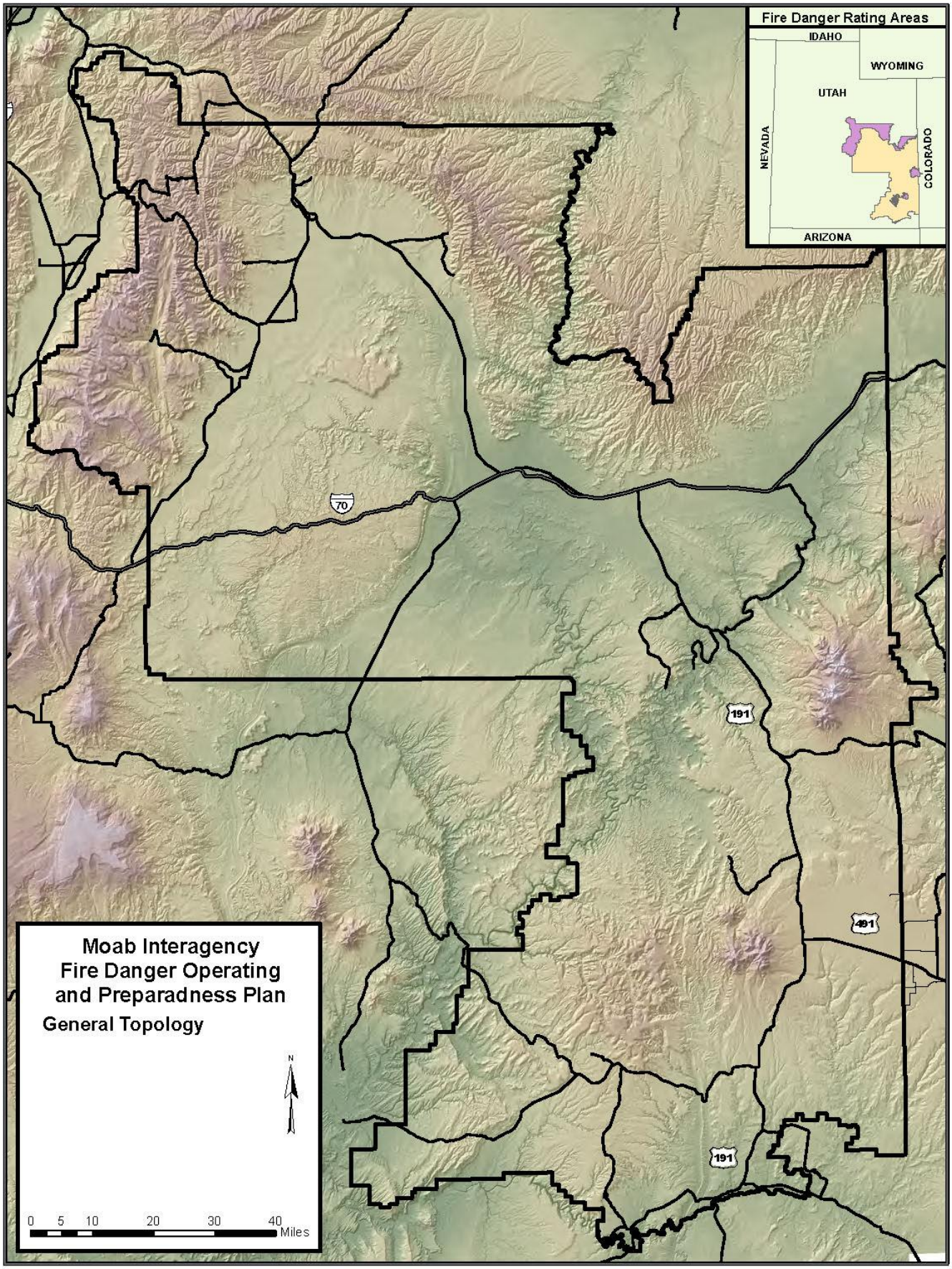

Fire Danger Rating Areas
IDAHO
WYOMING
UTAH
NEVADA
COLORADO
ARIZONA
Moab Interagency
Fire Danger Operating
and Preparadness Plan
Fire Cause
Natural
Human
N
0 5 10 20 30 40
Miles
Spanish Fork
Salem
Scofield
Helper
Price
Fairview
Wellington
Sunnyside
Moroni
Mount Pleasant
Wales
Spring City
Ephraim
Elmo
Cleveland
Huntington
Orangeville
Clawson
Ferron
Emery
70
Green River
Castle Valley
Moab
191
Hanksville
Bicknell
Torrey
Boulder
491
Monticello
Blanding

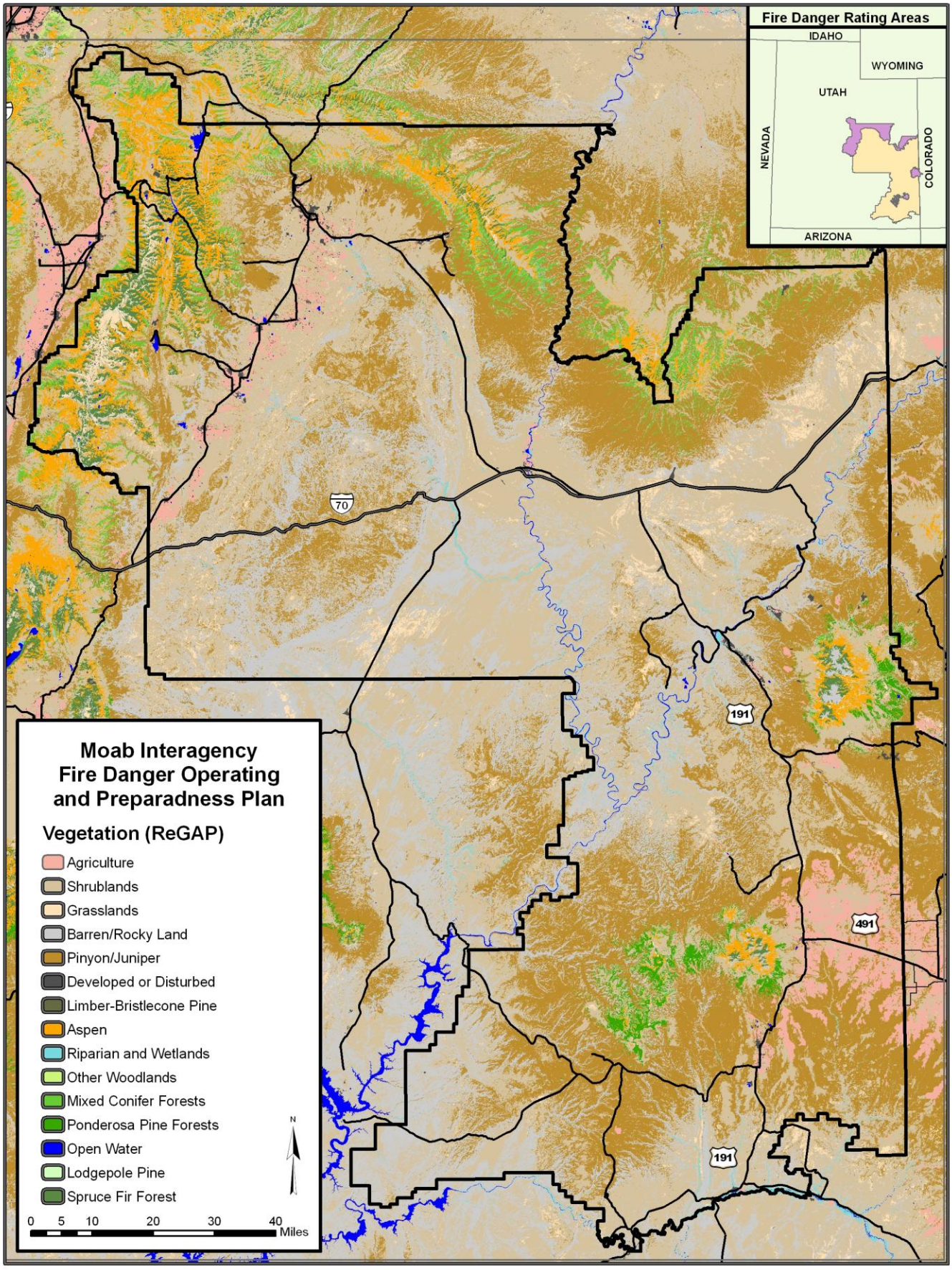

Fire Danger Rating Areas
IDAHO
WYOMING
UTAH
NEVADA
COLORADO
ARIZONA
Moab Interagency
Fire Danger Operating
and Preparadness Plan
Large Fire Polygons
Fire Perimeters
N
0 5 10 20 30 40
Miles
Spanish Fork
Salem
Woodland Hills
Scofield
Helper
Price
Fairview
Wellington
Sunnyside
Moroni
Spring City
Wales
Ephraim
Elmo
Cleveland
Huntington
Manti
Orangeville
Clawson
Ferron
Emery
70
Green River
Castle Valley
Moab
191
Logan
Hanksville
Bicknell
Torrey
Boulder
491
Monticello
Blanding
191

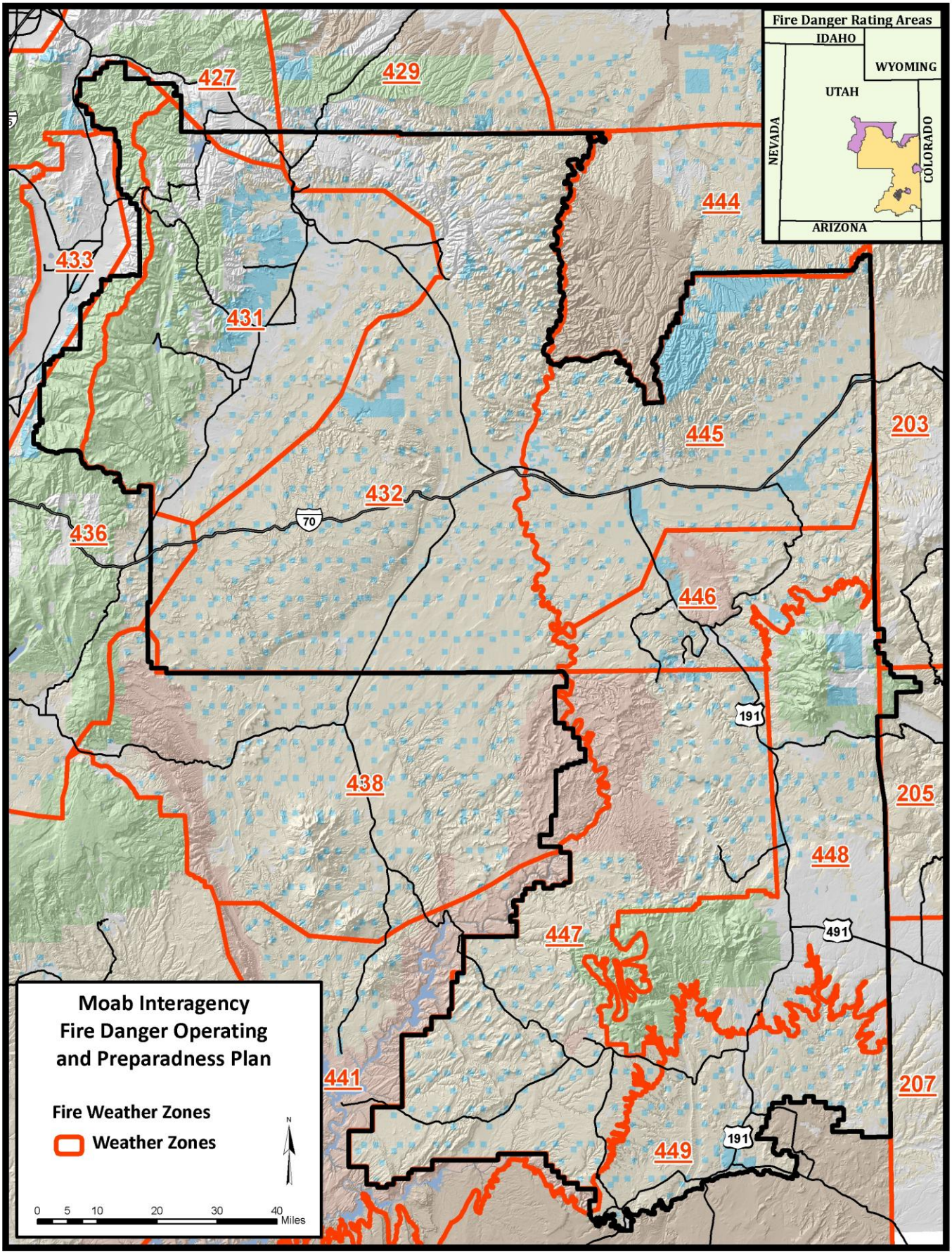

Fire Danger Rating Areas
IDAHO
WYOMING
UTAH
NEVADA
COLORADO
ARIZONA
Moab Interagency
Fire Danger Operating
and Preparadness Plan
Ownership
BLM
USFS LANDS
PRIVATE
STATE LANDS
NATIONAL PARKS
NATIVE AMERICAN LANDS
0 5 10 20 30 40
Miles
N
Spanish Fork
Salem
Woodland Hills
Scofield
Helper
Price
Fairview
Mount Pleasant
Moroni
Wales
Spring City
Wellington
Sunnyside
Elmo
Cleveland
Huntington
Ephraim
Manti
Orangeville
Clawson
Ferron
Emery
70
Green River
Castle Valley
Moab
191
Loa
Bicknell
Torrey
Hanksville
491
Monticello
Blanding
191

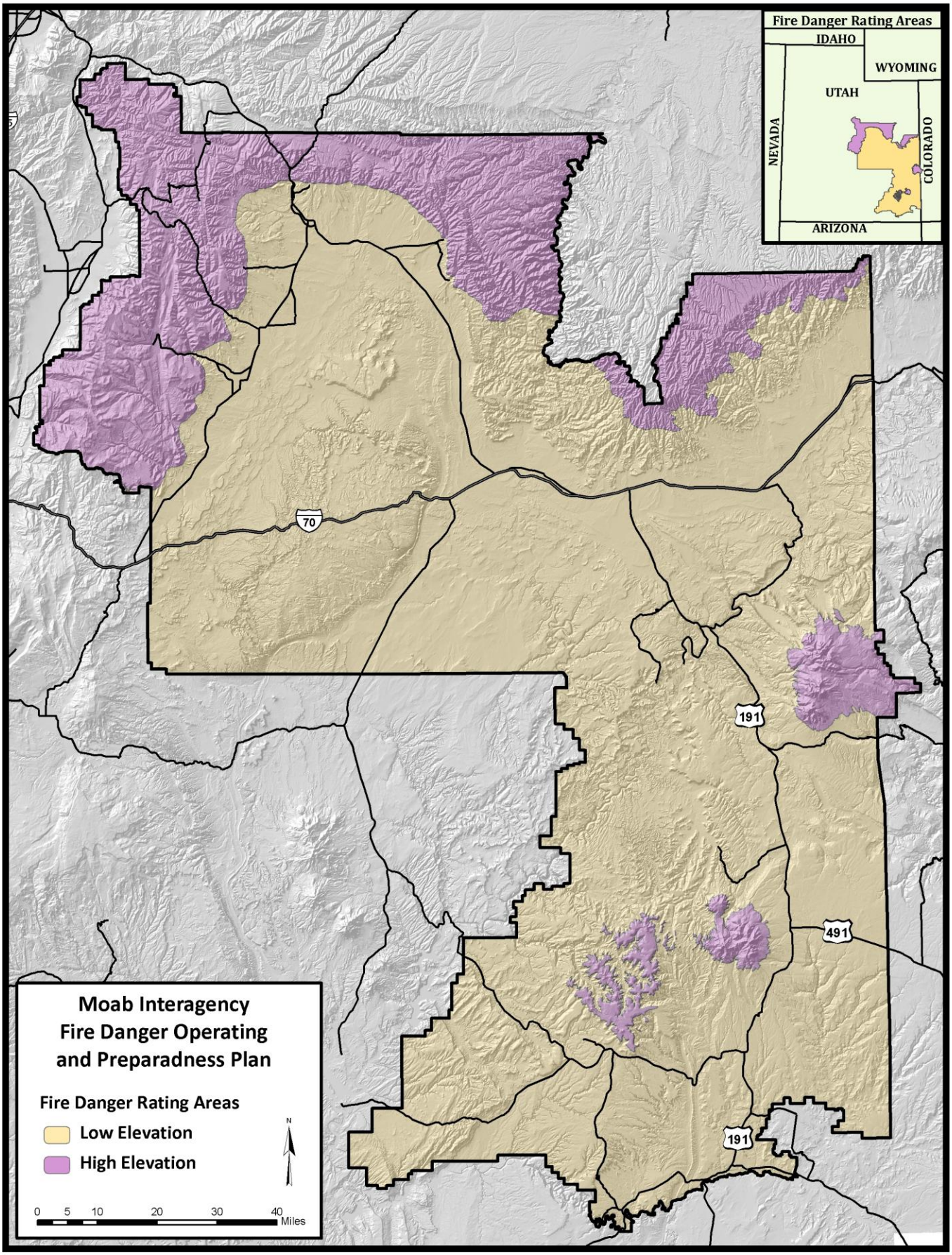

Fire Danger Rating Areas
IDAHO
WYOMING
UTAH
NEVADA
COLORADO
ARIZONA
Moab Interagency
Fire Danger Operating
and Preparadness Plan
Precipitation (annual mean)
0 - 5 inches
5 - 10 inches
10 - 20 inches
20 - 30 inches
30 - 40 inches
40 - 44 inches
N
0 5 10 20 30 40 Miles
Spanish Fork
Salem
Woodland Hills
Scofield
Helper
Price
Fairview
Mount Pleasant
Moroni
Wellington
Sunnyside
Wales
Spring City
Ephraim
Elmo
Cleveland
Huntington
Manti
Orangeville
Clawson
Ferron
Emery
70
Green River
Castle Valley
Moab
191
Hanksville
Loa
Bicknell
Torrey
491
Monticello
Blanding
191


Fire Danger Rating Areas
IDAHO
WYOMING
UTAH
NEVADA
COLORADO
ARIZONA
Moab Interagency
Fire Danger Operating
and Preparadness Plan
Temperature (annual mean)
22 - 25
25 - 30
30 - 35
35 - 40
40 - 45
45 - 50
50 - 55
55 - 60
65
N
0 5 10 20 30 40 Miles
Spanish Fork
Salem
Woodland Hills
Scofield
Helper
Price
Fairview
Mount Pleasant
Moroni
Wales
Spring City
Wellington
Sunnyside
Ephraim
Elmo
Cleveland
Huntington
Manti
Orangeville
Clawson
Ferron
Emery
70
Green River
Castle Valley
Moab
191
Loa
Bicknell
Torrey
Hanksville
491
Monticello
Blanding
191


Fire Danger Rating Areas
IDAHO
WYOMING
UTAH
NEVADA
COLORADO
ARIZONA
70
191
491
191
Moab Interagency
Fire Danger Operating
and Preparadness Plan
General Topology
N
0 5 10 20 30 40
Miles


Fire Danger Rating Areas
IDAHO
WYOMING
UTAH
NEVADA
COLORADO
ARIZONA
Moab Interagency
Fire Danger Operating
and Preparadness Plan
Vegetation (ReGAP)
Agriculture
Shrublands
Grasslands
Barren/Rocky Land
Pinyon/Juniper
Developed or Disturbed
Limber-Bristlecone Pine
Aspen
Riparian and Wetlands
Other Woodlands
Mixed Conifer Forests
Ponderosa Pine Forests
Open Water
Lodgepole Pine
Spruce Fir Forest
N
0 5 10 20 30 40
Miles
70
191
491
191


Fire Danger Rating Areas
IDAHO
WYOMING
UTAH
NEVADA
COLORADO
ARIZONA
427
429
444
433
431
445
203
432
70
436
446
191
438
205
448
447
491
441
207
191
449
Moab Interagency
Fire Danger Operating
and Preparadness Plan
Fire Weather Zones
Weather Zones
N
0 5 10 20 30 40
Miles


Fire Danger Rating Areas
IDAHO
WYOMING
UTAH
NEVADA
COLORADO
ARIZONA
70
191
491
191
Moab Interagency
Fire Danger Operating
and Preparadness Plan
Fire Danger Rating Areas
Low Elevation
High Elevation
N
0 5 10 20 30 40
Miles